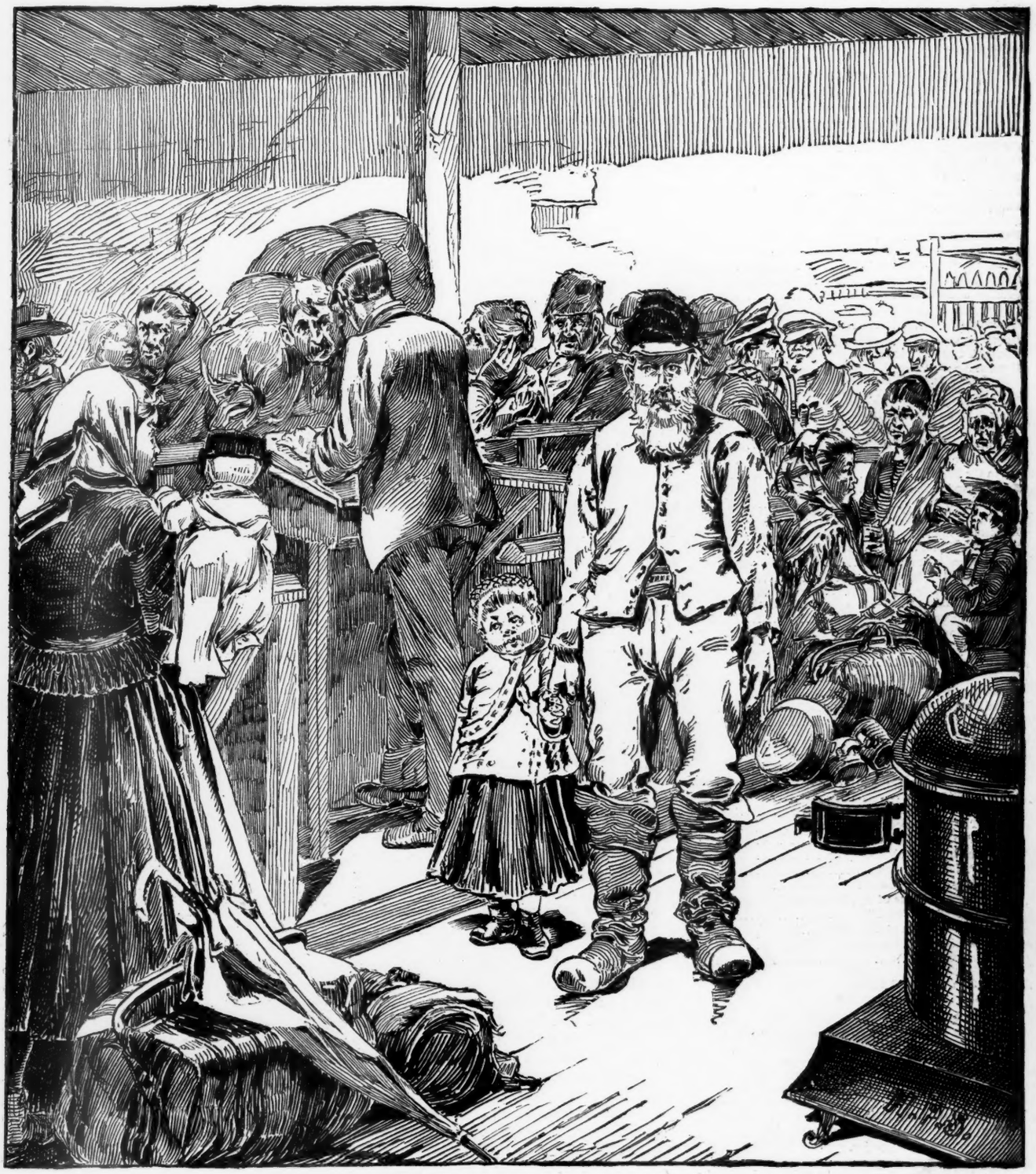
# AMERICAN AGRICULTURIST

*For the Farm, Garden, and Household.*

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

VOLUME XL.—No. 1. NEW YORK, JANUARY, 1881. NEW SERIES—No. 408.

A VIEW OF CASTLE GARDEN.— *Drawn and Engraved Expressly for the American Agriculturist.*

Castle Garden may be regarded as the hopper, into which is poured the raw material that is soon to be converted into American citizens. In its management it is most beneficent, as it receives the new comer—weary with an ocean voyage, dazed at everything around him new and strange—and starts him for his new home, which, in the majority of cases, is somewhere at the West. The scene after an arrival, when the officials are finding out the destinations of the immigrants is chosen for the above engraving.


COPYRIGHT, 1880, BY ORANGE JUDD COMPANY.



ENTERED AT THE POST OFFICE AT NEW YORK, N. Y., AS SECOND CLASS MATTER.

## Contents of this Number.

[Articles marked with a star (*) are illustrated; the figure with the star indicates the *number* of illustrations.]


Among the Farmers, No. 60.—Home Building—The Exposure- Chimneys and Fuel ..... *..14-15
Apples, About New ..... 23
Barometer, Explaining the, and its Uses..... 3*.. 7
Boots, Water-proof ..... 14
Bee Notes, for January..... 4*..34
Bees, Stingless ..... 5*..36
Bob Sleds, Home Made..... *..15
BOYS AND GIRLS' COLUMNS:—*The Doctor's Talks:*—About Your Eyes—Gigantic Water Bug—Bread Made of Insects' Eggs—Pigeon Tremex—Ichneumon Flies. Our Puzzle Box. Tricks with Strings. A Wonderful Clock. Proverb Picture Puzzle. The Knight Templar Rock. *The Doctor's Correspondence:*—The Swiss Village of Interlaken, and View of the Jungfrau ..... 8*..26-28
Bricks, Specimens of ..... 36
Castle Garden, A View of ..... *.. 1
Chilblains ..... 33
Corn, The Cuzco, or Peruvian..... 4*.. 9
Feverfew, The Marsh—"Marguerite"..... *..22
Floor, Barn Strengthening..... 3*..14
Food, Cooking, Scalding Hogs..... *.. 6
Fowls, Water for, in Winter..... *.. 9
Foxes' Skins ..... 15
Furnaces, Hot-Air, the Most Useful..... *..35
Gate, "A "Self-Opening"..... *..17
Gauge, A Rail Fence ..... 2*..15
Harrow and Smoother Combined..... *.. 7
Harrow, The Monroe Rotary ..... *..19-20
Horse Clothing..... 4*..11
Houghton Farm—Purposes and Plans ..... 8
House, A Country Cottage, Costing $1,600 ..... 5*..12
HOUSEHOLD:—Pepper Freshly Ground. Home Made Earth Closets. To Keep and Use the Apples. *Home Topics:*—How to Treat Frost Bites—Winter Butter. A Water Guard. New Recipes. Cooking a Turkey. Mixing Bread with a Machine..... 6*..24-25
Humbugs. Sundry ..... 35
Ice, Loading, with a Team..... *..18
Information, Seasonable..... 36
Ivy in the House..... *..23
Long Island, About ..... *..11
Luncheon for Horses..... 4*..16
Maple, Wier's Cut-Leaved..... 2*..21
Markets—Commercial Matters, etc ..... 38
Medicines, Secret ..... 33
Milk Tester, A New ..... *..16
Milking Stool, A handy ..... *..15
Notes from the Pines:—Paris Flower Market—Plants for House Decoration—Paris Vegetable Market..22-23
Notes on Orchard and Garden Work..... 2*..4-5
Orchard, How to Start with little Money..... 4*.. 6
Pea, New Dwarf—"American Wonder"..... *..21
Pears, Seedling ..... 23
Ponies, American-Bred Shetland..... *..13
Potato Bug and Tobacco Smoke..... *..19
Postal Items:—Lost Letters ..... 34
Potatoes, English, and Potato Shows..... *..19
Push, The Snow..... *..17
Rack, A Hay, for a Cart..... *..19
Scab in Sheep: Its Remedies ..... 3*..18
Science Applied to Farming..... 5*..10
Seed, Vitality of ..... 33
Sheep, Racks and Troughs for..... 4*..18
Sheep, The Flat-Tailed..... *..15
Shows, Poultry, for January..... 38
Sled, How to Make a Flat-Bottom..... 2*..16
Stump-Puller, A Capstan ..... 4..19
Suggestions for the Work of the Month ..... 9*..2
Tim Bunker on Value of Apples as Food for Stock. .. 8
Wagon, A "Buck-Board" ..... *..17
Wagons, Conversion of, into Sleds. ..... 4*.. 7
Water we Need, and How we Get It..... *..17
Well, Bottom of a ..... 2*..36


☞ **See pages 33, 36, and 38** for Publisher's Business Items," Postage Rates, etc.

☞ **See page 42** for Subscription Terms, etc.

☞ **See especially now on page 37** about Books and other special offers, premiums, etc., etc.

☞ Owing to the necessity of sending part of the middle pages to press in advance of the other sheets, considerable good reading and other matters are thrown over to pages 33 to 38. These pages will be found none the less valuable because chancing to follow some of the business or advertising pages.

☞ The Illustrative Engravings and Sketches in the *reading* pages of this number count up over *One Hundred*, including the center and four corner sketches of the first Cover Page, which are *new* in every successive number. Besides the above, which belong to the reading pages proper, there are a great number of well printed engravings all through the advertising pages which are interesting to examine, and often instructive.


# AMERICAN AGRICULTURIST.

NEW YORK, JANUARY, 1881.


## Suggestions of and for the Season.

Farmers, Gardeners, Stock-raisers, Fruit-Growers and Dairymen, are no less "manufacturers" than are the makers of cloth, and of a thousand other products resulting from the application of labor and skill to raw materials. By mechanically preparing the soil, sowing seed, cultivating and gathering, we obtain grain, hay, cotton, grass, roots, vegetables, fruits and flowers, from the raw materials in the soil and the elements supplied by air and water—aided by the sun's heat and light. From the grass, hay, grain and roots we manufacture meats and dairy products, using animals as the machines. After obtaining the perfected results, the producers become merchants or traders when exchanging the surplus, not needed in home consumption, for money or other articles. Dealers, shippers, transporters, exporters and importers, increase the value of raw or manufactured materials by taking them from the places where they are less wanted to those where they are more wanted.

In brief, all the above classes are occupied in producing articles of value from those of no intrinsic value, as grain from mold of the soil; or in increasing the value of articles by change of form or change of location. And all are equally pursuing a praiseworthy occupation, and they and their work are alike honorable, if they are equally honest and industrious. All the talk, or thoughts harbored, about the occupation of a merchant, or manufacturer, or importer, being higher or more honorable or even more desirable than that of a farmer, are fallacious and misleading. The glare and glamour arising from the fact that now and then a merchant, not one in a thousand, secures large wealth by a favorable combination of circumstances and by extensive operations, should not blind us to the fact that, in proportion to the numbers engaged, a hundred times more farmers than merchants advance to independence if not to great wealth. Ninety-five out of every hundred who enter upon a mercantile life fail, or do not rise above the condition of drudging employees, with a bare subsistence not one whit better than is enjoyed by the lowest farm laborer. While on the contrary few who earnestly follow agricultural pursuits fail to secure, at least comfortable food and clothing and lodging, for themselves and families.

---

The false notions, above indicated, are a great bar to the best success in farming and kindred pursuits. We all expect the manufacturer and merchant to put into practice business habits and ideas; to study into the best modes and appliances, to be wide awake to what others are doing in the same line. But somehow, while not always publicly admitted or allowed, the farmer and his family harbor the idea, and unfortunately act upon it, that their occupation is of a lower grade, a sort of inferior manual labor employment, endured as a necessity rather than from choice—a machine life, affording little opportunity for exercising thought, skill, enterprise, study, improvement, or for the eminent success that comes to other pursuits. As a rule, they are secretly gratified if a son has an opening in a merchant's establishment, or a daughter is affianced to the scion of a family in mercantile pursuits. This false feeling is a drag upon the energies, the self confidence, the cheerfulness, the ambition, the study, the progress, that should be manifested in the life and work of every cultivator of the soil, whether of a few still unpaid for acres, or of the larger farm.

At the beginning of this new year, let us start with a just appreciation of our occupation, a determination to make the best of it, to deserve the highest success, which is the next best thing to actually achieving it, even if we fail to do so.

---

In our position of farm manufacturers and merchants, it is well to take account of stock; to figure up and put down on paper, in some form however simple, a catalogue of everything we have, small and large, with its present value, indeed every implement, every animal, produce and cash on hand and dues to us, the farm itself, each field and the value invested in growing winter crops upon it, etc. On the other hand, set down every liability, and strike a balance. One great effort of the coming twelve months will be to increase the stock on hand, and decrease the liabilities. If not done hitherto, begin with January 1, to note down, each day, every transaction, the work of the day, what is sold or bought, of or to whom, and its price, whether paid for or not, etc. The writer of this kept such a journal, on a farm of 238 acres, from the age of 14 years onward. At first it was only written on foolscap sheets. A rough plot of the fields was made and each one numbered, and the amount of plowing and sowing, seed, manure, etc., expended on each and every field were written down at night. All the larger animals were named. The sheep, swine, and poultry, too numerous to name, were classified for reference. In brief, everything on the farm was noted down on paper, and everything done or transpiring was daily entered with the pen. It furnished entertainment, and the sheets became valuable for reference in many cases. A simple style of farm book-keeping grew out of it, which was of decided utility: but we will leave that for the present. We would be exceedingly pleased to know that every farm reader of this, or some one in his family, would start such a complete memorandum, beginning January 1, 1881. We know its usefulness by experience, and what good it leads to.

---

Let one of the first plans for the year be to secure more knowledge about our occupation. Certainly we each know some things that others do not, and every other man knows some things that we do not. Writing and talking with others, the talks at farmers' club meetings and conventions, what others think and say, as given in books and papers, are all sources of new ideas. Let the head help the hands by better thinking and better plans. One can not talk with an intelligent neighbor, or read a farm book, or farm paper, without getting some new idea, or suggestion, that will help his own thinking and planning.

---

Well, along with the above, we must look after the work in hand. The farm animals are the chief care at this season, generally; not merely to get them through winter, but in the best condition, and to do this at the

least expense—for that means the best profit in the end. Any flesh or strength lost for want of a pound of hay or grain, will be likely to require half a dozen pounds of feed to restore it, and here "a penny saved" is "a sixpence lost." Animals grow less in winter; most of their food goes to keep up internal heat to supply that escaping by reason of the cold outside. A warm place will save much of the food thus used, and less will be required, or more will go to increasing growth and weight, and that is profitable. Warm shelters, barns, stables, closed cracks, tight fences, straw sheds well shut in, "dug-outs" on the prairies for cattle, horses, sheep, swine, poultry

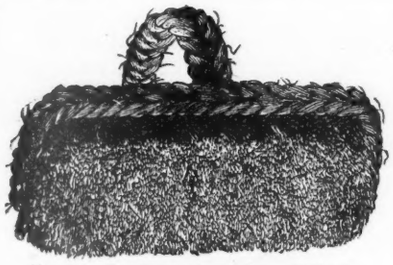


Fig. 1.—A RATTAN BRUSH FOR ANIMALS.

—all of these are feed-saving, growth-producing, health-conserving, and therefore sources of real profit. There is money in keeping every animal shielded from wind and cold, as much as possible, excepting only that they be not confined in foul air . . . . Growing animals need more food and protection than mature ones. The future size, vigor, and value of a horse, ox, cow, or sheep, may be doubled by a little extra feed and care during the growing period, and especially in winter. The boy's idea of feeding his pig only on alternate days "so as to have a streak of fat and a streak of lean meat" is too often acted upon—unintentionally of course. The one day's hunger will pull down a colt or calf, or other animal, greatly. Warm or unfrozen water is a health-saver and food-saver . . . . Thought and mechanical skill will devise many contrivances for saving feed.

Figure 1 shows a very convenient Brush for animals, made of split rattan, which is flexible, not softened by water, and is very durable. It is less harsh to the skin than the ordinary metal curry-comb. These brushes are on sale generally, at quite moderate prices.

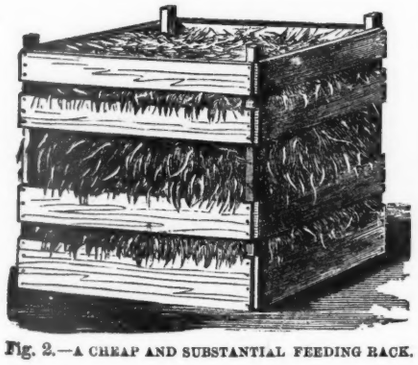


Fig. 2.—A CHEAP AND SUBSTANTIAL FEEDING RACK.

Figure 2 shows a simple, easily constructed Feed-Rack for the stock yard. The fodder is thrown in at the top, and drawn out by the cattle through the open space between the boards, only as fast as eaten, saving waste.

---

"*Bricks without straw*" are made now, but none without clay. Milch cows and hens are manufacturers, but they cannot make something out of nothing. They must have the raw materials, or they cannot produce milk and eggs. And when they have the materials, the abundance and quality of production will depend upon the machinery being kept in good working order—not cold or frozen up. A shivering cow or hen is in poor condition to produce well. So give them good shelter. The cow will pay you back for a warm mash of cut feed and bran or richer meal. Likewise the hen for a frequent dish of warm boiled potatoes or mush, in a warm place. Gravel for her "mill," and ground bones or oyster shells for egg shells are needed. A hen may lay a shell-less egg, but she will not keep it up intentionally . . . . The "bricks without straw or clay" idea, is of wide application as to farm animals generally:—to cows and hens making milk and eggs; to sheep making wool; to growing colts, calves, lambs, pigs, etc., making flesh and bone; to working animals making muscle to supply the place of that used up by exertion of strength; to all animals, human included, making fat to supply that used up constantly in keeping the body warm, especially in winter. All must have the raw materials to manufacture from, and among these water, not ice cold, or nearly so, in full supply, is one of the indispensable elements—not the only one. No more profitable study is there for the keeper of animals, than to carefully learn and know what materials, and what mixtures of them, yield the largest returns at the least expense; as well as the condition of the manufacturing machines, or animals, as affecting their producing capabilities.

---

Some of our Western readers will smile at what follows, but before doing so we request them to turn back and read on page 340 of the last September *American Agriculturist*, the experience of "A Yorkshire Farmer on the Prairies." That chapter ought to be read and pondered and acted upon by every dweller on prairie soil. It would be worth much to those who heed it, and worth untold millions to the country.—Take a field of corn, for example, in fair order as to soil. With the soil under half the hills mix a pint each of good manure, leaving half the hills without. We affirm that, on the average, the manured hills will give much larger ears, more of them, and much more good corn and stalks, usually 15 to 30 bushels more per acre, with no more cost for plowing, planting, and hoeing. The same holds good for nearly all crops. The lesson we desire to inculcate strongly, is, that every handful or pint of good manure made and saved will give a good hill of corn, large full ears, in place of small ones, perchance only short ears or nubbins; or equivalent results with other crops. The wise farmer who means to be a successful manufacturer of crops this year, will give great attention to the making and saving, in the best condition, of every possible load, bushel, pint of good manure he can, from this day on. He will not let a gill of the brown, but golden liquid escape by running out, or washing out by rains. If without straw or litter to absorb it all, he will bring in leaves, muck, or even sods, or loam for the purpose. Some way he will hold it and get it among the plant roots next summer, sure.

---

Those who burn wood should understand well that the escaping steam from burning green wood carries off, *in a latent state*, a large part of the heat produced; that a cord of dry wood supplies as much heat for use as two cords of green wood; that two cords of some kinds of wood when dry have no more weight to be hauled than one cord of green. Therefore, the prudent man will, this winter, when labor is cheap, have a full supply of wood all cut and split and ready to use.

---

Killing hogs, if not already over, is one of the jobs of this month. The cold uses up so much fat that there is less profit, if any, in feeding for fattening during low thermometer weather, unless there are warm, enclosed pens, and hardly then. Fig. 3 shows a simple home-made scraper, handy to remove the hair after scalding. It is merely a piece of a scythe, bent into the form shown in the engraving, with the ends fastened to a wooden handle.

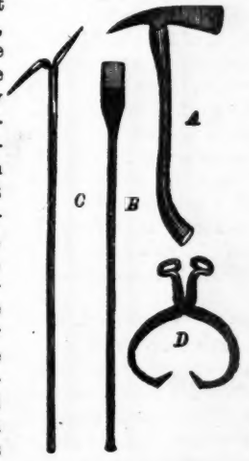
Fig. 3.—A HOG-SCRAPER.

---

The object of these Notes is partly to offer suggestions and hints, and partly as a reminder of needed work or care. A few hints more must suffice now. To say nothing of good looks, keeping the skin of animals clean, and often livened up with curry-comb and brush, conduces to comfort, and health, and profit, and this for colts, cows, oxen, and calves, as well as for horses. See fig. 1 . . . . Daily exercise for all kinds of animals is good, if it is not oppressively cold, or icy walking. Fattening hogs and milk cows need but little exercise, however. . . . . Mares in foal ought to have roomy box stalls, without halters . . . . Apples, potatoes, turnips, mangels, or cabbage leaves, etc., are very good, along with dry feed, for any and all animals. Cut hay, scalded and sprinkled with mush, or even a little bran, or meal, is relished, and good for them.

---

In gathering ice it is risky to wait for it to get as thick as we would like to have it. When there is solid ice six inches thick, the harvest should begin at once; some do not wait after it is four inches thick. If there is a fall of snow while the ice is forming, remove it from the surface while it is light, where it is intended to cut at once; scrapers, a snow push (see page 17), stable brooms, etc., may be used. The hardware and implement stores furnish a complete outfit of ice tools; markers, plows, planes, saws, breakers, etc.; all very desirable for large operations, but for the farmer's use few tools are required beyond those he has upon the farm. The tools shown in figure 4 are those most needed, *A* is an Ice Hatchet, of the approved shape; a common hatchet or small axe will answer. The splitting-bar, *B*, used to break ice after it has been deeply grooved, is a heavy chisel with an iron handle. The




Figs. 4–7.—ICE TOOLS.

pike, *C*, is very useful, especially to handle ice while it is in the water. Any blacksmith can fit two chilled iron points in a handle. At *D* are the hand-tongs, useful in removing the ice as well as storing it. Saws especially for the work may be bought, but a cross-cut saw, with one handle removed, will do good service; figure 8 shows a convenient handle. A hand-skid, figure 9, will often be useful; it is a board about five feet long, with a cleat at one end and handles at the other. If a pair of runners, of strong hoop, are put under the end, the board may be used as a sled for drawing the blocks to some distance. In some cases a long skid or shute will be needed; this is a board of the needed length, with raised edges, as shown on page 18. A stone-boat, sleds, or wagons, according to circumstances, must be provided. The ice being cleared of snow, it is then lined into strips 18 inches wide, using a board as a straight edge, and some strong iron point, or an axe, as a marker. A hole is first cut for the saw to enter, and the cutting is done along the lines. The strips may be cut into squares, by using the saw, or by first making a deep groove with the axe, and using the splitting-bar (*B*, figure 4) to break them apart. Suggestions as to loading the ice are given on page 18.

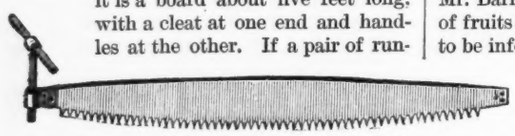


Fig. 8.—A CROSS-CUT SAW ARRANGED FOR SAWING ICE.

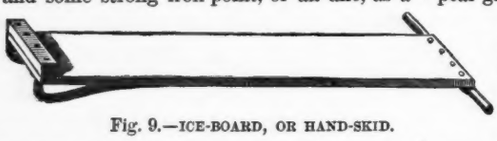


Fig. 9.—ICE-BOARD, OR HAND-SKID.

## The Orchard and Garden for January.

No other time in the year is so well adapted to reading as the long evenings of winter. A great deal of cultivation can be done by the fireside, and an application of "brain manure" can be made now that will give a good return in the future. In spite of the sneers at "book-farming," the world is fast learning that the experience of others, as stated in a journal or book, is none the less valuable for being in print. As works which treat of the plant in its relations to the soil, air, water, etc., we know of none equal to "How Crops Grow," and "How Crops Feed," by Prof. S. W. Johnson. Whoever masters these has made good use of his time, and can never regret the hours thus spent. The point first to be gained in an agricultural education is a clear knowledge of first principles, so far as they have been determined, and on this, as a foundation, one can safely base his study in some special branch of culture.

### Orchard and Nursery.

The number of those who in this country are orchardists exclusively is very few, and these are mainly confined to the great peach centers. But many farmers have large orchards, and the growing of fruit is an important part of their farming. When we use the term orchardist, it refers to whoever has an orchard, be it large or small. Orchard culture being in many respects different from ordinary farming, the orchardist needs the help of special works. Among the very first of these is, "The Fruit Garden," by Patrick Barry, which should be in the library of every grower of fruit. It is full of just the practical information needed, beginning at the beginning, and in plain and simple language describes, with the aid of illustrations, the various methods of pruning, budding, grafting, etc. "The American Fruit Culturist," by John J. Thomas, is another valuable work. Though not so full of details as Mr. Barry's work, its larger descriptive list of fruits makes it of value to those wishing to be informed on the different varieties. As a work of reference, a cyclopædia of all the varieties known up to the time of its publication, the most complete is the "Fruits and Fruit Trees of America," by our greatest pomological authority, Charles Downing. Among special treatises, those works devoted to the culture of a single kind of fruit, there are "The Peach Culturist," by the Hon. J. Alexander Fulton. This gives full instructions for the starting and after management of a peach orchard, as practised in Delaware and Maryland. "Pear Culture for Profit," by P. T. Quinn, is a valuable special work on the cultivation of pears, by one who has made pear-growing profitable. There are many other books on kindred subjects, any one of which contains much of value. The enterprising orchardist will not only be familiar with the contents of these standard works, but keep himself posted as to the new facts that appear from time to time in the journals.

Little work can now be done in the orchard. All trees should be protected from intruders of every kind. Horses and cattle should be kept from old trees, as they often do much injury by browsing the twigs. Young trees are not only to be guarded against the larger animals, but from mice and rabbits. Hence, when there is a fall of snow, it should be trampled firmly around the trees to keep off the mice. Rabbits are kept away by smearing the trunks with blood or bloody meat. The eggs of the tent-caterpillar are easily seen and removed in winter. Manure may be drawn out and spread in the orchard at any time. . . . Now is the proper time to think about orchard planting. If fruit trees are to be set out next spring, two leading points should be considered: the thorough preparation of the ground, and the selecting of the varieties of fruit. An orchard set on poor soil, poorly prepared, will be a poor investment. Another important point is that it costs no more to grow a tree of a good variety than a poor one. It is difficult to give a list of varieties of apples, pears, etc., that will suit every one in every locality. A list that will aid in making the selection was given in the Notes for last January, and may be consulted . . . . In purchasing fruit trees, it is of the first importance that they shall be true to name; and second, that the trees be healthful and well grown. We place accuracy first; a poor tree by care may be grown to make a good one, but if one who intended to set an orchard of Northern Spy or Newtown Pippin, finds after waiting six or eight years that he has only Early Harvest or Pumpkin Sweets, he has no remedy. A good share of his life, so far as orchard culture goes, has been wasted. Hence our frequent advice not to buy of tree peddlers, but to always deal directly with a nursery of known reputation. One cannot afford to plant doubtful trees if they are given to him. Therefore, unless a "nursery agent" can show that the nursery he represents is responsible for him, don't buy, if the hoped-for orchard must be postponed. If disposed to listen to one believed to be an agent of a nursery you know to be reliable, it is always safest, after making up a selection, to send it direct to the nursery yourself, and get an answer that it is all right. If there is a reliable nursery near at hand, it is better, other things being equal, to get trees there.

### The Fruit Garden.

Under this head we treat of what are now generally known as "Small Fruits," as distinguished from the fruits of the Orchard. In this department the literature is very full, there being a large number of general and special treatises. The "Fruit Garden," of P. Barry, already referred to, in its title hardly indicates its full scope. In the present use of the term "Fruit Garden" one might suppose that it treated of small fruits only. The fact is, it is largely devoted to the raising and the cultivation of trees, while the small fruits, though they receive their full share, are not the leading topics. Whoever has this work has a most excellent general guide to the culture of small fruits, though so far as varieties go, reference must be made to the catalogues of the dealers for the newer sorts. The "Small Fruit Culturist," by A. S. Fuller, has long been a standard work, while "Success with Small Fruits," by E. P. Roe, shows what art can do in presenting a matter of fact subject....Grapes are included as small fruits, and here the latest, freshest work is "American Grape Growing and Wine Making," by Prof. Geo. Hussman. This treats especially of vineyard culture. The "Grape Culturist," by A. S. Fuller, will perhaps better meet the requirements of those who would grow but a few vines. "Mohr on the Grape Vine" is a most suggestive little work....Other special works of value are; "The Illustrated Strawberry Culturist," by A. S. Fuller, and the "Cranberry Culturist," by J. J. White. It should be generally understood that Cranberry culture can only be successful where there are certain natural conditions of the soil. White's work plainly shows what these are and how to take advantage of them.... What follows is intended for *every farmer* who reads this paper. It is a well known fact that every city or village mechanic has during the year a greater variety of strawberries, raspberries, etc,, which he buys, than are to be seen upon the table of many a wealthy farmer. The *American Agriculturist* has constantly endeavored to show how easily every farmer's table can be supplied with the choicest fruits and vegetables at a very little expense. We are glad to know that our teachings have brought good results, but there is still room for improvement. Now we would ask you—the reader—Have *you* upon your table, from the time the first strawberry comes, to that when the last grape disappears, all the fruit, every day—yes three times a day—that your family can eat? If you have not, you are not living up to your privileges, and if your boys, who now and then go to the town, and see how much better off their town cousins are in this respect, will not "stay on the farm," it is well that you should know one reason why.—Town's people, city people, with half the general prosperity—*live better* than the farmer. It is of no use to blink this fact. Con-

tinuous salt pork and cabbage, and no fruits in their season, have much to do with boys leaving the farm. If this matter of bodily food, with the lack of mental food in the way of books and papers, were properly considered, we should have fewer farmers writing us asking "how to keep boys on the farm."... At the beginning of the year we all make good resolutions, and none better can be made by a farmer, be his acres few or many, than the resolution to devote a portion of his land to a fruit garden. The *how* we will tell him in time. It is enough for this month to get the resolution to do it....What we have said on the fruit garden applies equally to the

### Kitchen and Market Garden.

It is the Kitchen Garden which we especially plead for. There is no reason why a city mechanic or a store porter should go home to a better dinner than the farmer who owns his hundreds of acres—but he does, so far as variety of vegetables go. We unite under one head Kitchen and Market Garden, and there is no farmer near a market who may not find it profitable to combine the two in reality. The books in this department are of the best and most practical kind. The leader here is "Gardening for Profit," by Peter Henderson, a work that tells how to raise vegetables with profit. It is written by one who is thoroughly practical and teaches from experience. "Money in the Garden," by P. T. Quinn, covers a similar ground, but in a different manner, while "Farm Gardening and Seed Growing," by F. Brill, takes a still different view of the subject. Each contains enough that the others do not, to make them all valuable aids to the private or the market gardener. For the Southern States, "Gardening for the South," by W. N. White, is commended. There are several special crops of importance enough to have a separate treatise, among which are pamphlets on Onion and Hop-Growing; and the Culture of Squashes and of Cabbages by J. J. H. Gregory.... At this season cold frames will need special attention. Keep in mind the fact that the plants in cold frames should not start into growth during winter—if they do, when a cold snap comes they will be killed. When the temperature is above 30° the sashes should be removed, and ventilation given at all times, save during the most intense cold.... Hot-beds in the Southern States are started this month. Sashes should be put in order now for use in the Northern States....Roots, as well as celery in trenches are apt to suffer more from heat than from cold. The object is to keep them from actual freezing, but they should not be kept too warm. If celery in trenches starts to grow it will soon become "pipey" and worthless. In a warm spell, such as we often have this month, the trenches may need to have some of the covering removed.... Look after the seeds; throw away all of doubtful value, and order new stock early. The same with implements, which often need a new piece.

### Flower Garden and Lawn.

Under this head we give hints as to the management of whatever may be regarded as ornamental ground, whether it be the farmer's front yard, the city or village plot, or the larger areas of those who devote some acres to pleasure grounds. Those who would consult works on this subject can find several useful ones. There are many who have a village or suburban plot which they would devote in part to fruit and to vegetables, while a share is given to flower culture. Such will find their wants anticipated and provided for in Henderson's "Gardening for Pleasure." As a general treatise on flower gardening and flowers, especially the hardier kinds, Breck's "New Book on Flowers" is full of interesting instruction. To those who would improve their present grounds, or lay out a new place, the "Beautifying Country Homes," by Weidenman gives abundant instruction. A standard work on rural matters, and one which is most charming in its style, is Downing's "Landscape Gardening."....As to actual work in the Northern States, it must be mainly that of preservation. If the winter is one of heavy snows there is great danger that the Evergreens may be disfigured. When the snow lodges in the branches it should be beaten out before it gets icy. If there is a deep snow, dig it away from the lower branches of such evergreens as may be covered by it, lest the mass in settling may drag down and break the branches. In the country there will be those who will make a "cross cut" for the house, disregarding the roads, and in this way great damage is often done to valuable shrubs that are hidden by the snow. Where there is danger of this, set poles and stretch fence wire to keep thoughtless persons in the way they should go.

### Greenhouse and Window Plants.

Those who have no gardener, but manage their own greenhouse, as well as those lovers of flowers who, having no greenhouse, find enjoyment in their Window Garden, will find great assistance from "Gardening for Pleasure," (which supposes that there is "pleasure" in window gardening), and "Practical Floriculture," by Peter Henderson. Another admirable work is "Winter Greeneries," by the Rev. E. A. Johnson, D.D., which is

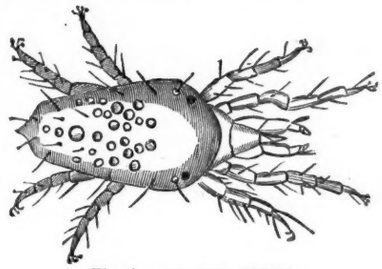


Fig. 1.—THE RED SPIDER.

especially devoted to window gardening, and home decoration with easily managed plants. ....If our advice has been followed, bulbs for winter blooming were potted last fall and placed in the cellar. A few pots at a time should be brought into heat whether in the window or greenhouse. If one wishes annuals in greenhouse or window, the seeds should be sown now.... Water, Dust, Insects—these are the three subjects that demand the attention of the grower of flowers, whether he has a few pots in the window or a greenhouse full. As to watering, it is oftener overdone than neglected. We received a note from a gentleman who had followed our directions, and yet his plants would not flourish. Happening near his residence, we called on the writer, and a glance showed the cause of the trouble. In every pot the soil was sopping wet, in the condition of mud. Plant life was impossible. In every pot, for every plant, except an aquatic, the soil should be so loose—made so, by adding sand—that all excess of water will drain off. It is better to withhold water until the plants by wilting show the need of it, than to keep up this constant soaking. With properly loose soil, daily watering may be required, but if the soil is close, do not water until it seems to be dry and needs it.... Dust is more injurious to plants than many suppose. With smooth-leaved plants, use a damp sponge or soft cloth, and wipe off each leaf. Others may be set in a bath-tub or sink, and showered, using a fine rose watering-pot, once a week. Arrange a screen of light

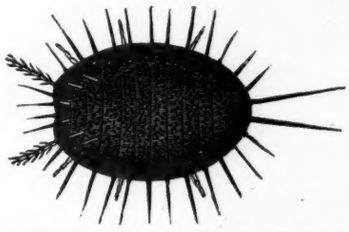
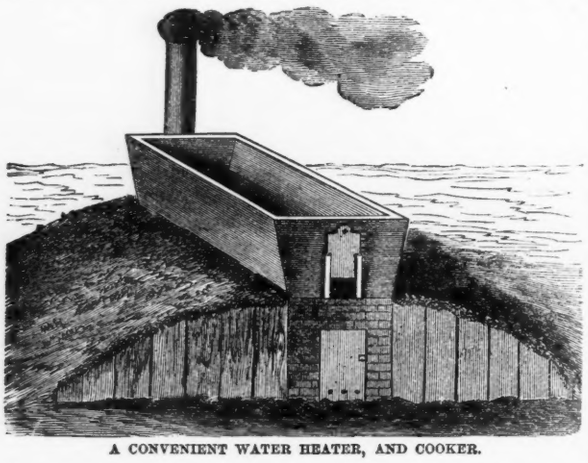


Fig. 2.—THE MEALY BUG, WITH "MEAL" REMOVED.

fabric, or even of paper, to put over the window plants while the room is being swept, and until the dust has settled.... Insects are sometimes seen, but often unsuspected as the lack of thrift. The small, active plant-lice are readily seen, and are most common. They may be killed by tobacco smoke, or tobacco water, but if taken in time, can be kept under by the use of a brush—an old soft tooth-brush passed over the twigs will soon clear them out. So with scale insect; if discovered, remove it. The insect of all others that does the most mischief unnoticed is the "Red Spider" (fig. 1). It is not a spider, and is not always red. If a house plant has its leaves turn brownish and looks unhealthy generally, an examination of the under side of the leaf with a strong magnifier will show a web over its surface and exeedingly small, red or more generally brown insects, like that in the very largely magnified engraving. It is one of the most destructive of plant insects, and yet one of the easiest to get rid of. Wash the under side of the leaves every few days, using an abundance of water, and it will soon disappear. The Mealy Bug (fig. 2), is another pest, often unobserved. It is usually found where the leaf joins a stem, or in the crotch of a branch, as a whitish coloring mass. Pick it out and kill. Indeed, with carefully tended plants, hand-work, killing the insects wherever found, is all that is required.... Worms in the ball of earth in pots often cause trouble by compacting the soil and leaving channels through which water will pass without moistening the mass of soil. When the ball of earth is turned out, the worms are usually found on the surface and may be removed. These and other worms, sometimes found in pots, may be killed by the use of lime-water. Perfectly clear lime-water may be used to saturate the earth of the pot, then in a few minutes ordinary water should be applied, enough to drive out all the lime-water.... Fertilizers should be applied to house plants only when they are in a growing state, and in the liquid form. Peruvian guano is excellent and very neat; dissolve a teaspoonful in warm water, and add it to a gallon of cold water. Water of Ammonia, often called Spirits of Hartshorn, a teaspoonful in a quart of water, may be used with good effect.

## Cooking Food—Scalding Hogs.

Whether one cooks food or not, there are occasions on the farm, especially at "killing time," when an apparatus for heating water is in demand. If the farmer finds that the boilers and cookers offered for sale are beyond his means, he can contrive a substitute at a less expense. The engraving shows an apparatus that has stood the test of several years' actual use. It consists of a box two feet wide, eight feet long, and 18 to 28 inches deep, made of two-inch hard-wood plank. The bottom is of heavy sheet-iron, so nailed to the sides and ends that the box may be water tight. The box rests on walls of stone or brick, built high enough to give room for a fire underneath. A sheet-iron door is placed at the front of the fireplace, which is large enough to admit good-sized knots from the wood-pile. A chimney for the escape of the smoke is made from an old stove-pipe set at the rear end of the "boiler." Earth is banked up against the outer sides of the walls, and should extend up above the bottom of the box, to prevent the escape of sparks and smoke. A close-fitting sliding door is placed in front, to be used in drawing off the contents of the box. A cover—an inch plank with edges bevelled to fit the sides of the box, and with a handle at each end—should be provided. This arrangement, devised by the late S. H. Clay, of Kentucky, and brought to notice by T. D. Coburn, in his excellent "Swine Husbandry," is given in answer to requests for a cheap apparatus of the kind. It serves for boiling corn, pumpkins, etc., for hogs and other stock. Such a boiler will be handy to heat water for scalding hogs, and many other uses upon the farm.



A CONVENIENT WATER HEATER, AND COOKER.

## How to Start an Orchard With Little Money.

A settler upon a new farm is often obliged to defer planting an orchard for several years, as aside from other demands upon labor on fields, he can not just then afford to invest the necessary money in trees. There is a plan by which one may secure trees for an orchard which shall ultimately cost him nothing. To do this, he must be able to make a small outlay of money, give a little intelligent labor, and be willing to wait for a few years. This can be done by starting with Root-grafts. As few outside of nurseries know what these are, let us explain. We may let a seedling tree grow to be 6 or 10 feet high, cut it off where we wish the head to begin, and put in grafts of the kind we desire. All between the root and the grafts is of the seedling tree, and of no use except to support the top. Or we may cut the seedling off at the level of the ground, or just below it, and put the grafts in there; the result will be the same in both cases, but in the last it will take the graft longer to grow and come into bearing. In making root-grafts, a seedling stock, about the size of a lead-pencil or a little larger, is cut off, at what nurserymen term the "collar" (*i. e.*, the point of union between root and stem) and a graft inserted. The small end of the root and matted fibres are cut off. The root-graft, when finished; is about 8 inches long, and appears as in figure 1; it is really a cutting of a desirable variety towhich is attached a root of a seedling, of course of an unknown kind. The root-graft is planted so deep that but one bud is above the surface. The point of union being underground and moist, such grafts rarely fail. This kind of grafting is done in the winter; the grafts are stored in boxes of earth in the cellar, and are in readiness to set out in spring. Some nurseries, especially at the West, advertise root-grafts and have them regularly in their catalogues. They can be bought in large quantities very low—usually less than $2 per hundred. If procured from a nursery of good reputation, there should be no more risk as to accuracy in names than with regular trees. They are sent out packed in boxes with either sand or sawdust to prevent the roots from drying. As there may be some having seedling apple stocks, who would like to root-graft them, we will briefly show how it is done. Indeed if one chooses he can buy stocks and cions and graft them himself, though in a small way there would be scarcely any saving by so doing. The root, fig. 2, is cut off at the "collar," with an upward sloping cut, and the lower end removed, leaving the root 3 or 4 inches long; in the center of the slope, *A*, a cut is made downwards, as at *B*, to form the "tongue." The cion, fig. 3, of the same size and about the same length, is cut with a slope downwards, *A*, and a similar tongue, *B*, made in the face of the slope. The two pieces are then locked together as in figure 4, the tongue of one in the slit of the other, taking care that the *inner barks* of the two come in contact as much as possible; if the cion and stock are unequal in size, then secure as complete a bark contact as may be on one side. (These three engravings are from the "Fruit Garden," by P. Barry, the most complete and practical work on all that relates to the nursery and orchard.) One with a sharp knife and some apple twigs of the right size, can learn in a very short time to make a neat and complete fit, and the rapidity will soon follow. This is called the "whip graft," and is perhaps the best for any grafting where both cion and stock are nearly the same size. The graft is finished by wrapping the joint with paper upon which grafting wax has been spread; some tie the graft with cotton twine and brush the melted wax over the joint; others, still, use cotton twine that has been passed through the melted grafting wax. Some nurserymen, instead of "whip grafting" as above described, use the "side graft." Here the cion is cut to a slender wedge, and placed in a diagonal cut an inch or more long, the joint being covered as before. The method strikes us as less suited to root-grafts that are to be transported to a distance. The finished root-grafts are placed in boxes, their roots covered with damp sand or sawdust—properly labelled and kept in a cool cellar until spring. On a large scale one man prepares the grafts, another cuts the roots and inserts them, and a third waxes—several clamps and other contrivances being used to facilitate the work. A good-sized stock is often used for two or three cions, a practice condemned by some, who claim that one cion only should be inserted at the collar. Only the main, or tap-root of young seedlings should be employed; the use of side roots from old trees at one time brought root-grafts into disrepute, but properly done it is perfectly successful, and is now the general method of propagating the apple. The fact that it can be done in-doors during winter, is largely in its favor, and one may purchase root-grafts from a reputable nursery with confidence that they will grow into good trees. The question will be asked: "How soon will root-grafts make trees large enough to set out?" That will depend somewhat upon the variety of apple, and also upon the cultivation; three years at least, and generally four years will be required to make a tree of proper size to plant in the orchard. The details of planting and after care will be given another month. We stated in the beginning that one's trees might "ultimately cost him nothing." It will take but little more time to cultivate 1,000 trees than it will to care for 500. The trees at the end of four years will find a ready sale at many times the cost of the grafts, and should bring full nursery prices on account of being at hand, and not having to run the risks of transportation. If one can afford the moderate immediate outlay, this will, with fair care, be a profitable crop. If this care can not be given, then it should not be undertaken, as nothing is more unsalable than badly grown trees. Buying seedling stocks saves time. Any one can raise them by planting apple seeds in good soil in spring; the majority of the seedlings should be large enough by fall to graft.

Fig. 1.

Fig. 2.




Fig. 3.

Fig. 4.

## Explaining the Barometer and its Uses.

The Greek word *metron* means a measure. Another Greek word, *baros*, means weight or pressure. Putting these two words together we have *baros-metron*, or our English word *barometer*, which means a measure of weight or pressure. The use of this word is limited to instruments for measuring the weight or pressure of the air.* Air would seem to have almost no weight, but the air in an ordinary barrel actually weighs 9¾ ounces; or 2¾ bar-

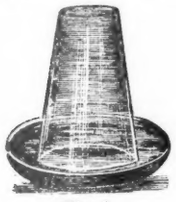


Fig. 1.

Fig. 2.

rels of air weigh one pound. The air in a room only 10 feet square and 10 feet high weighs over 76 pounds. The weight of all the air on the surface of the earth is so great that it presses down upon every square inch nearly 15 pounds (14.61), and upon every square foot 2,104 pounds, or over a ton!

If we sink a deep tumbler in the water, and when full lift it nearly out, fig. 1, with the mouth downward, the pressure of the air upon the water in the dish will keep the water up in the tumbler. If the tumbler were 34 feet long, the air would still push the water up on the inside nearly to the top, but it will not push it any further up, however high the tumbler may be, because the whole weight of the air is equal to the weight of only about 33½ feet of water.

If we put mercury (quicksilver) in the dish instead of water, the same effect will take place, but the mercury will rise only about one-fourteenth as high, because it is about 14 times heavier than water. Take a glass tube, (*a*, fig. 2,) 33 inches long, closed at one end, fill it with mercury and put the finger over the top end. Now turn it down into a dish of mercury, *b*, and the mercury in the tube will sink down to *c*, leaving a vacuum above it. If the tube is an inch square on the inside, we will find that about 30 inches deep will weigh nearly 15 pounds. That is, the whole weight of air pressing on one inch is about 15 pounds. Our glass tube of mercury, is a *baros-metron*, or as we English it, a *barometer*, a measurer of the weight or pressure of the air. We can set the lower open end of the tube in a box or bag of mercury, and the effect will be the same, for the air will press upon the bag and push the mercury up about 30 inches high in the tube.

Fig. 3.

There are a good many forms of barometers. A common one is shown in fig. 3, which is arranged to be carried about, and the top part is marked off with fine lines, say a tenth of an inch apart, so that we can see and note when the mercury goes higher or lower, as it will do if the pressure of the air is greater or less. This one has a *thermometer* at the left of the top to show the temperature also.

*The Greek word *thermos* means heat or warmth. So a *thermos-metron*, or *thermometer*, means a measurer of *heat*.

### Some Uses of the Barometer.

If we go up on a hill or mountain, there is less air above to press upon the mercury, and it will sink down in the tube, say about one inch for every 650 feet we go up. Then at one mile high (5,280 feet), the mercury would sink some eight inches, and show only about 22 inches high in the tube. In this way, with good barometers and with proper allowances for heat, etc., they actually measure the hight of mountains very accurately.

But the greatest use of the barometer is to foretell changes in the weather. If from any cause the air is lighter, or has less pressure in any place, the air from other places will flow in there, producing a wind. So if the mercury falls we may usually expect the air from elsewhere to come rushing in. If the seaman sees the mercury in his barometer fall very rapidly, he hurridly takes his sails in and gets ready for a strong wind, or hurricane, perhaps. But on land we generally expect that if a wind from one place meets the air in or from another place which is warmer or colder, it will produce precipitation of moisture in the form of rain. There are several rules for judging by the movement of the mercury up or down when there is likely to be wind or rain, or both, and this can be done several hours in advance. So we see *how* a barometer can be very useful to farmers, and indeed to almost everybody. The rules for judging or predicting usually go with barometers, and we omit them here.

The Weather Bureau at Washington, having telegraph lines to all parts of the country, can learn where the barometer is high, and where low, and thus tell where the air will be likely to move as wind; and by knowing the temperature, etc., the kind of weather, the movement of storms, their rapidity, the time of their approach, etc., can be foretold with a great deal of accuracy. Every farmer may well have a barometer and learn to judge from it for his own locality. A very good barometer was described in the last September *American Agriculturist*, on page 383.

## Conversion of Wagons into Sleds.

A few years ago a member of our family was caught "on wheels" about sixty miles from home, a fall of a foot of snow making it impossible for him to return with a wagon. Being handy with tools, and where oak planks were to be had, he made a sled in a day, put his wagon upon it, and came home in good shape.

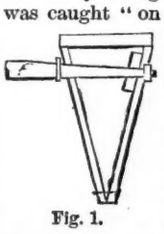


Fig. 1.

In this case the sled was simply two runners cut from the plank, long enough to hold the wagon-body, and fastened together by plank cross-pieces securely nailed to the runners. The wheels were removed and the body lashed to the runners by ropes.

Four independent runners may be quickly made, one to go in place of each wheel. Each runner is of three pieces of board, two forming the sides, and the other the top. Figure 1 is a cross-section, showing the position of the side-pieces and the axle of the wagon. The outer side-piece is sawed full of kerfs at the front end that it may bend around and meet the other side-piece. The inner side of this piece is shown in figure 2. Cleats to give strength are put on the side. The runner is shown complete in figure 3. A spring wagon thus arranged with runners make a quite

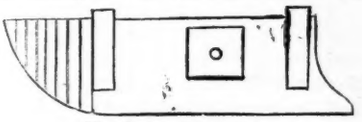


Fig. 2.—A SIDE PIECE.

passable sled. This contrivance is not for general use, but only for an emergency.

Another method occasionally found convenient, is shown in figure 4. Two stout

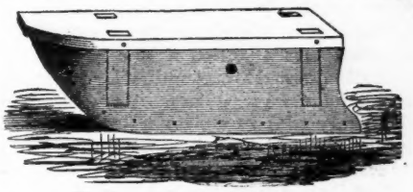


Fig. 3.—THE RUNNER FINISHRD.

hickory saplings are smoothed on two sides and grooves made for the wheels to stand in. The runners thus made are fastened to the wheels by stout wires which pass through

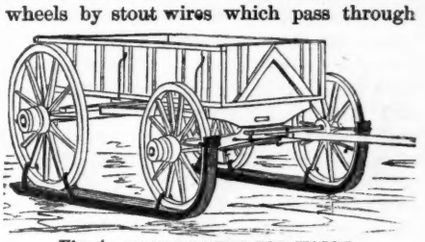
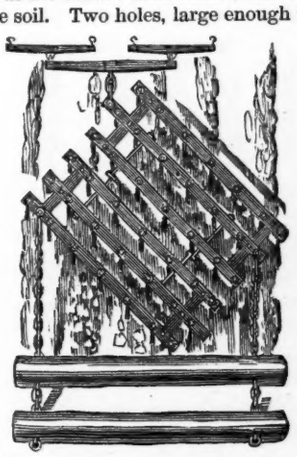


Fig. 4.—LONG RUNNERS FOR WAGON.

holes bored in the runners—the front ends being bent upwards and fastened to the felloes in the same way as the bottom part.

## A Harrow and Smoother Combined.

Mr. "C. H. S.," Miami Co., O., sends a sketch of an appliance which he thoroughly tested while preparing his wheat ground. It is a combination harrow which answers two purposes, viz.: "First, crushing the clods; and second, securing a smooth surface by covering the harrow marks in advance of the drill, so that the seeds may reach a uniform depth. The poles should be the same length in feet as the harrow is in width; diameter to suit the soil. Two holes, large enough to ad-

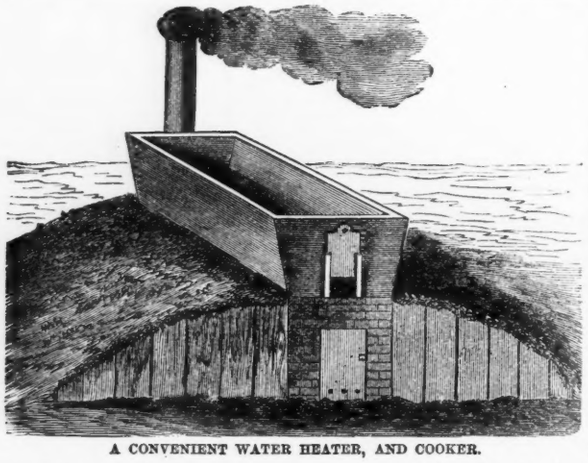


A HARROW WITH SMOOTHING LOGS.

mit the chains, should be bored about one foot from each end of the poles—the poles being keyed apart the same distance with small wedges of wood to keep from clogging."

### Cooking Food—Scalding Hogs.

Whether one cooks food or not, there are occasions on the farm, especially at "killing time," when an apparatus for heating water is in demand. If the farmer finds that the boilers and cookers offered for sale are beyond his means, he can contrive a substitute at a less expense. The engraving shows an apparatus that has stood the test of several years' actual use. It consists of a box two feet wide, eight feet long, and 18 to 28 inches deep, made of two-inch hard-wood plank. The bottom is of heavy sheet-iron, so nailed to the sides and ends that the box may be water tight. The box rests on walls of stone or brick, built high enough to give room for a fire underneath. A sheet-iron door is placed at the front of the fireplace, which is large enough to admit good-sized knots from the wood-pile. A chimney for the escape of the smoke is made from an old stove-pipe set at the rear end of the "boiler." Earth is banked up against the outer sides of the walls, and should extend up above the bottom of the box, to prevent the escape of sparks and smoke. A close-fitting sliding door is placed in front, to be used in drawing off the contents of the box. A cover—an inch plank with edges bevelled to fit the sides of the box, and with a handle at each end—should be provided. This arrangement, devised by the late S. H. Clay, of Kentucky, and brought to notice by T. D. Coburn, in his excellent "Swine Husbandry," is given in answer to requests for a cheap apparatus of the kind. It serves for boiling corn, pumpkins, etc., for hogs and other stock. Such a boiler will be handy to heat water for scalding hogs, and many other uses upon the farm.



A CONVENIENT WATER HEATER, AND COOKER.

### How to Start an Orchard With Little Money.

A settler upon a new farm is often obliged to defer planting an orchard for several years, as aside from other demands upon labor on fields, he can not just then afford to invest the necessary money in trees. There is a plan by which one may secure trees for an orchard which shall ultimately cost him nothing. To do this, he must be able to make a small outlay of money, give a little intelligent labor, and be willing to wait for a few years. This can be done by starting with Root-grafts. As few outside of nurseries know what these are, let us explain. We may let a seedling tree grow to be 6 or 10 feet high, cut it off where we wish the head to begin, and put in grafts of the kind we desire. All between the root and the grafts is of the seedling tree, and of no use except to support the top. Or we may cut the seedling off at the level of the ground, or just below it, and put the grafts in there; the result will be the same in both cases, but in the last it will take the graft longer to grow and come into bearing. In making root-grafts, a seedling stock, about the size of a lead-pencil or a little larger, is cut off, at what nurserymen term the "collar" (*i. e.*, the point of union between root and stem) and a graft inserted. The small end of the root and matted fibres are cut off. The root-graft, when finished; is about 8 inches long, and appears as in figure 1; it is really a cutting of a desirable variety towhich is attached a root of a seedling, of course of an unknown kind. The root-graft is planted so deep that but one bud is above the surface. The point of union being underground and moist, such grafts rarely fail. This kind of grafting is done in the winter; the grafts are stored in boxes of earth in the cellar, and are in readiness to set out in spring. Some nurseries, especially at the West, advertise root-grafts and have them regularly in their catalogues. They can be bought in large quantities very low—usually less than $2 per hundred. If procured from a nursery of good reputation, there should be no more risk as to accuracy in names than with regular trees. They are sent out packed in boxes with either sand or sawdust to prevent the roots from drying. As there may be some having seedling apple stocks, who would like to root-graft them, we will briefly show how it is done. Indeed if one chooses he can buy stocks and cions and graft them himself, though in a small way there would be scarcely any saving by so doing. The root, fig. 2, is cut off at the "collar," with an upward sloping cut, and the lower end removed, leaving the root 3 or 4 inches long; in the center of the slope, *A*, a cut is made downwards, as at *B*, to form the "tongue." The cion, fig. 3, of the same size and about the same length, is cut with a slope downwards, *A*, and a similar tongue, *B*, made in the face of the slope. The two pieces are then locked together as in figure 4, the tongue of one in the slit of the other, taking care that the *inner barks* of the two come in contact as much as possible; if the cion and stock are unequal in size, then secure as complete a bark c ct as may be on one side. (These three en vings are from the "Fruit Garden," by Barry, the most complete and practical rk on all that relates to the nursery and orchard.) One with a sharp knife and some apple twigs of the right size, can learn in a very short time to make a neat and complete fit, and the rapidity will soon follow. This is called the "whip graft," and is perhaps the best for any grafting where both cion and stock are nearly the same size. The graft is finished by wrapping the joint with paper upon which grafting wax has been spread; some tie the graft with cotton twine and brush the melted wax over the joint; others, still, use cotton twine that has been passed through the melted grafting wax. Some nurserymen, instead of "whip grafting" as above described, use the "side graft." Here the cion is cut to a slender wedge, and placed in a diagonal cut an inch or more long, the joint being covered as before. The method strikes us as less suited to root-grafts that are to be transported to a distance. The finished root-grafts are placed in boxes, their roots covered with damp sand or sawdust—properly labelled and kept in a cool cellar until spring. On a large scale one man prepares the grafts, another cuts the roots and inserts them, and a third waxes—several clamps and other contrivances being used to facilitate the work. A good-sized stock is often used for two or three cions, a practice condemned by some, who claim that one cion only should be inserted at the collar. Only the main, or tap-root of young seedlings should be employed; the use of side roots from old trees at one time brought root-grafts into disrepute, but properly done it is perfectly successful, and is now the general method of propagating the apple. The fact that it can be done in-doors during winter, is largely in its favor, and one may purchase root-grafts from a reputable nursery with confidence that they will grow into good trees. The question will be asked: "How soon will root-grafts make trees large enough to set out?" That will depend somewhat upon the variety of apple, and also upon the cultivation; three years at least, and generally four years will be required to make a tree of proper size to plant in the orchard. The details of planting and after care will be given another month. We stated in the beginning that one's trees might "ultimately cost him nothing." It will take but little more time to cultivate 1,000 trees than it will to care for 500. The trees at the end of four years will find a ready sale at many times the cost of the grafts, and should bring full nursery prices on account of being at hand, and not having to run the risks of transportation. If one can afford the moderate immediate outlay, this will, with fair care, be a profitable crop. If this care can not be given, then it should not be undertaken, as nothing is more unsalable than badly grown trees. Buying seedling stocks saves time. Any one can raise them by planting apple seeds in good soil in spring; the majority of the seedlings should be large enough by fall to graft.

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

## Explaining the Barometer and its Uses.

The Greek word *metron* means a measure. Another Greek word, *baros*, means weight or pressure. Putting these two words together we have *baros-metron*, or our English word *barometer*, which means a measure of weight or pressure. The use of this word is limited to instruments for measuring the weight or pressure of the air.* Air would seem to have almost no weight, but the air in an ordinary barrel actually weighs 4¾ ounces; or 2¾ barrels of air weigh one pound. The air in a room only 10 feet square and 10 feet high weighs over 76 pounds. The weight of all the air on the surface of the earth is so great that it presses down upon every square inch nearly 15 pounds (14.61), and upon every square foot 2,104 pounds, or over a ton!

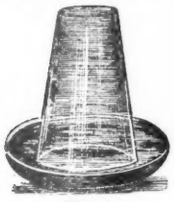


Fig. 1.

Fig. 2.

If we sink a deep tumbler in the water, and when full lift it nearly out, fig. 1, with the mouth downward, the pressure of the air upon the water in the dish will keep the water up in the tumbler. If the tumbler were 34 feet long, the air would still push the water up on the inside nearly to the top, but it will not push it any further up, however high the tumbler may be, because the whole weight of the air is equal to the weight of only about 33½ feet of water.

If we put mercury (quicksilver) in the dish instead of water, the same effect will take place, but the mercury will rise only about one-fourteenth as high, because it is about 14 times heavier than water. Take a glass tube, (*a*, fig. 2,) 33 inches long, closed at one end, fill it with mercury and put the finger over the top end. Now turn it down into a dish of mercury, *b*, and the mercury in the tube will sink down to *c*, leaving a vacuum above it. If the tube is an inch square on the inside, we will find that about 30 inches deep will weigh nearly 15 pounds. That is, the whole weight of air pressing on one inch is about 15 pounds. Our glass tube of mercury, is a *baros-metron*, or as we English it, a *barometer*, a measurer of the weight or pressure of the air. We can set the lower open end of the tube in a box or bag of mercury, and the effect will be the same, for the air will press upon the bag and push the mercury up about 30 inches high in the tube.

Fig. 3.

There are a good many forms of barometers. A common one is shown in fig. 3, which is arranged to be carried about, and the top part is marked off with fine lines, say a tenth of an inch apart, so that we can see and note when the mercury goes higher or lower, as it will do if the pressure of the air is greater or less. This one has a *thermometer* at the left of the top to show the temperature also.

*The Greek word *thermos* means heat or warmth. So a *thermos-metron*, or *thermometer*, means a measurer of *heat*.

### Some Uses of the Barometer.

If we go up on a hill or mountain, there is less air above to press upon the mercury, and it will sink down in the tube, say about one inch for every 650 feet we go up. Then at one mile high (5,280 feet), the mercury would sink some eight inches, and show only about 22 inches high in the tube. In this way, with good barometers and with proper allowances for heat, etc., they actually measure the hight of mountains very accurately.

But the greatest use of the barometer is to foretell changes in the weather. If from any cause the air is lighter, or has less pressure in any place, the air from other places will flow in there, producing a wind. So if the mercury falls we may usually expect the air from elsewhere to come rushing in. If the seaman sees the mercury in his barometer fall very rapidly, he hurridly takes his sails in and gets ready for a strong wind, or hurricane, perhaps. But on land we generally expect that if a wind from one place meets the air in or from another place which is warmer or colder, it will produce precipitation of moisture in the form of rain. There are several rules for judging by the movement of the mercury up or down when there is likely to be wind or rain, or both, and this can be done several hours in advance. So we see *how* a barometer can be very useful to farmers, and indeed to almost everybody. The rules for judging or predicting usually go with barometers, and we omit them here.

The Weather Bureau at Washington, having telegraph lines to all parts of the country, can learn where the barometer is high, and where low, and thus tell where the air will be likely to move as wind; and by knowing the temperature, etc., the kind of weather, the movement of storms, their rapidity, the time of their approach, etc., can be foretold with a great deal of accuracy. Every farmer may well have a barometer and learn to judge from it for his own locality. A very good barometer was described in the last September *American Agriculturist*, on page 383.

## Conversion of Wagons into Sleds.

A few years ago a member of our family was caught "on wheels" about sixty miles from home, a fall of a foot of snow making it impossible for him to return with a wagon. Being handy with tools, and where oak planks were to be had, he made a sled in a day, put his wagon upon it, and came home in good shape.

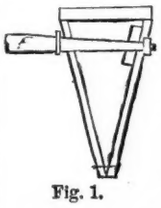


Fig. 1.

In this case the sled was simply two runners cut from the plank, long enough to hold the wagon-body, and fastened together by plank cross-pieces securely nailed to the runners. The wheels were removed and the body lashed to the runners by ropes.

Four independent runners may be quickly made, one to go in place of each wheel. Each runner is of three pieces of board, two forming the sides, and the other the top. Figure 1 is a cross-section, showing the position of the side-pieces and the axle of the wagon. The outer side-piece is sawed full of kerfs at the front end that it may bend around and meet the other side-piece. The inner side of this piece is shown in figure 2. Cleats to give strength are put on the side. The runner is shown complete in figure 3. A spring wagon thus arranged with runners make a quite passable sled. This contrivance is not for general use, but only for an emergency.

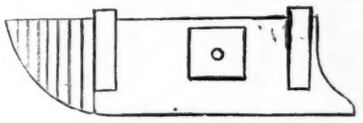


Fig. 2.—A SIDE PIECE.

Another method occasionally found convenient, is shown in figure 4. Two stout hickory saplings are smoothed on two sides and grooves made for the wheels to stand in. The runners thus made are fastened to the wheels by stout wires which pass through holes bored in the runners—the front ends being bent upwards and fastened to the felloes in the same way as the bottom part.

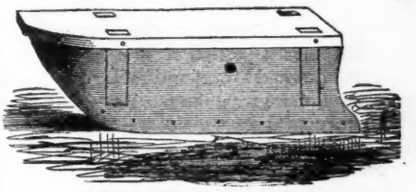


Fig. 3.—THE RUNNER FINISHED.

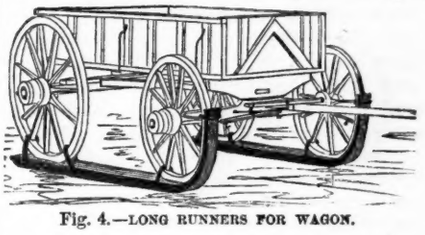
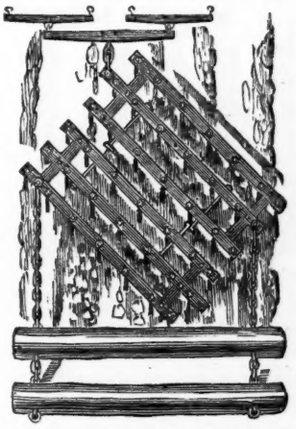


Fig. 4.—LONG RUNNERS FOR WAGON.

## A Harrow and Smoother Combined.

Mr. "C. H. S.," Miami Co., O., sends a sketch of an appliance which he thoroughly tested while preparing his wheat ground. It is a combination harrow which answers two purposes, viz.: "First, crushing the clods; and second, securing a smooth surface by covering the harrow marks in advance of the drill, so that the seeds may reach a uniform depth. The poles should be the same length in feet as the harrow is in width; diameter to suit the soil. Two holes, large enough to admit the chains, should be bored about one foot from each end of the poles—the poles being keyed apart the same distance with small wedges of wood to keep from clogging."



A HARROW WITH SMOOTHING LOGS.

## Houghton Farm.

**Purposes and Plans; Experiments in Progress; "Experimental Farms" vs. "Agricultural Experiments."**

The term "Experimental Farms" and "Agricultural Experiments" are often used without a very definite meaning. A farm on which cabbages are grown to test their relative earliness, or beets to see which is the greatest cropper, is not an Experimental Farm in the true or best meaning of the word; it is a *trial ground*, and as such is measurably useful. The results may or may not be different on a different soil, in another location.

When the *American Agriculturist* announced that a portion of Houghton Farm would be devoted to agricultural experiments, something more was intended than a mere temporary trial ground to test a variety of grain, or somebody's fertilizer, or hay-fork, or seed-drill. While these may come in incidentally and in themselves be useful, they can be done perhaps anywhere else as well. A "farm experiment" in its best sense, is one made to develop some fact or principle in agriculture of *general* application and utility, and the experiment is carried out to completion without regard either to the time required or to the immediate profit and loss. Take, for example, the noted field at Rothamsted, which has been continuously cropped with wheat for 37 years, without the addition of a particle of fertilizer in any form. The experiment has been carried on, not with reference to the bushels of wheat it would yield, but entirely for the *lesson* that yield, whatever it might be, would teach. And it has certainly given to the whole world a rich crop of teachings in wheat culture. Similar experiments in other directions, of less duration and completeness, have been and still are in progress there. The Houghton Farm enterprise has in view the development of *principles* that shall be of wide application, and beneficial to the whole country—some to be obtained at an early day, and others requiring more expenditure of time and money than would be given by experimenters who have not patience to go through with the slow but necessary details required to obtain complete demonstration of truth or error.

For the information of new readers, it may be explained that the farm referred to is in Mountainville, Orange County, N. Y., on the "short cut" branch of the Erie Railroad (L. E. & W. R. R.) running to Newburgh. The proprietor, Mr. Lawson Valentine, from the time it came into his possession, wished to make of the farm something more than a summer residence—satisfied that it was capable of being so set to work as to make it serviceable to agriculture in the manner already suggested above—providing the right man could be found to conduct the experiments. The choice finally fell upon Doctor Manly Miles, long connected, as Professor of Agriculture, with the Agricultural College of Michigan.

After considerable thought and consultation, it was decided that the first or leading field experiments most desirable and likely to be of the greatest benefit to our agriculture, should have reference to our most important national cereal, Indian Corn. A part of the experiments was planned to be somewhat similar to those prosecuted with such success by Messrs. Lawes & Gilbert, of Rothamsted, Eng. One of the tests proposed is the relative value of barn-yard manure, and different artificial fertilizers used continuously on the same plots of ground.

The farm, under previous owners, having been greatly neglected, much labor was expended in bringing it into suitable condition for experiments. For the Corn Experiments, two allotments of land have been prepared, one of 15 and the other of 16 plots. To secure equal conditions of moisture, a tile drain, three feet deep, has been laid lengthwise of each plot, the outlet being so arranged that the drainage water from each plot can be examined separately, if it is desired to determine the waste of fertilizing materials in the drainage, or any other question as to the water. These drains were finished last year, and to test the present condition of the soil, before trying the experiments, a crop of corn was grown without any fertilizer, and the produce of each plot weighed. It is believed that the continuous growth of Indian corn upon the same plots, under the same exact conditions, will throw much light upon the problems involved in the successful culture of our great cereal. While thus a variety of treatment can be tested upon different plots, there will be opportunity for accurate comparison in the different results observed.

Though the leading field experiments will be with corn, it is intended to have others going on at the same time. Experiments in the rotation of field crops have been commenced in a series of plots devoted to that purpose, of which we shall have more to say at another time.

As connected with the Corn Experiments, a number of feeding boxes have been constructed primarily for determining the value of the manure made for the experiments, and also to allow testing of the value of feeding stuffs and methods of feeding.

Aside from the field experiments, investigations are in progress in the production of Milk, and as soon as the building under way is completed, the manufacture of dairy products will be studied. What is enumerated here has reference to the experimental portions of the farm only. For the regular purposes of the farm, a number of well planned and substantial buildings have been erected, and the fields are being brought into shape for successful cultivation. With regard to some of the experiments outlined, the value of their results will increase with each consecutive year of their continuance. Other experiments reach results in a single season, and in the course of such investigations, points of general interest are often unexpectedly developed. But whatever they may be, the readers of the *American Agriculturist* will have the benefit of them as they will be made known through its columns, from time to time, as occasion offers. The aim has been to make thorough preparation, to move forward upon a well-digested plan, and this will explain why we have hitherto written so little concerning what has been in progress at Houghton Farm.

---

**Tan Bark.**—"X.," Cave Spring, Ga. "Will a liberal application of Tan Bark on an exhausted stiff clay be of any benefit? and if so, how much would it be safe to apply?"—The only effect that spent tan bark can have upon such a soil is a mechanical one, and if it can be had without cost it may be used. If we had the opportunity to obtain plenty of tan bark we would burn it and apply the ashes. These surely are good.

## Value of Apples as Food for Stock.

**A Farmers' Club Talk About It.**

FROM TIMOTHY BUNKER, ESQ.

"Have you seen Tucker's old cow lately?" inquired Seth Twiggs one morning in September, as he took the pipe out of his mouth, and set his foot on a log at my wood pile. "Got the horriblest relax on her ever you seed, and he is mighty afeard she's a goner."

"What's he been doing with her," I asked.

"Nothing much, I guess—only feedin' on her with apples, not quite ripe enough to make good cider."

"And how many apples in a day?"

"Wall, I do'no, but I guess he did not stop to measure 'em, but jest turned his cow right into the orchard, arter a storm, where they lay so thick you could not git round without stomping on 'em."

"The only wonder is, she isn't dead. The fool ought to know better," I answered.

"Waal, I do'no about that," Seth began to explain, as he readjusted his pipe. "Ye see, there has been a deal said lately in the papers, and at the Farmer's Club, about the use of apples for feeding stock, and I expect he wanted to try the experiment. Indeed, he said as much, that apples would be as good for his cow, as for anybody's, and as they was mighty plenty this year, he'd try 'em."

"And how does he like the experiment?"

"Mad as a March hare, you may depend; says he has had enough of book-farming to last him a year; says the Farmer's Club is a set of no-nothings and numb-skulls, from Tim Bunker down. Apples as cow-feed! You might jest as well feed a critter on soap bubbles. The old cow has been running down ever since he turned her into that orchard, has lost flesh, has shrunk milk, and he believed if he had kept her in there she would have lost her life."

"He took her out of the orchard, did he?"

"Yes he did, and I wonder how he had sense enough to do it. Guess he must have thought of saving the apples for cider."

### Discussion at the Farmers' Club.

The abundant yield of apples this fall has led to the discussion of the best methods of utilizing them in the Farmers' Club of Hookertown, and in other places. Connecticut has been famous for her fine apples from a very early day, and some of the best apples upon the list have originated upon our soil. In the even years we produce a large surplus of apples beyond the utmost capacity of our local markets, and we are beginning to export to Europe from Boston. Fair winter apples have been selling at the depots at one dollar a barrel, and even less. This does not leave much margin for profit. You see, the barrels, if new, cost about 30 cents a piece, and all the large orchards have to get some new barrels, especially if they send their fruit across the water. It costs 12 cents or more to pick them by hand, sort them and put them in barrels. The cartage to the depot is something, leaving but a small margin for profit, if we count the interest on the land anything. Some are used for drying in the evaporaters, and at home; some for canning, and for jelly, but these do not take a very large portion of the crop this year.

This has led a good many of our thinking

farmers to discuss the use of apples as a food for stock, and the topic has been up in our Farmer's Club this season. Hookertown may not be as good authority on apples as on some other crops, but still we have some good fruit growers, with level heads, who know better than to turn their milch cows into the orchards to eat up the wind-falls, after a heavy storm. The discussions we have had brought out more experience in the use of apples than I had supposed.

Dea. Smith said he had used them more or less in the abundant seasons for thirty years or over, and considered them among the most valuable rations produced upon the farm, taking into account the cost of production. In a well-established orchard, in full bearing, he thought the refuse apples, which were left after the barrelling for market was over, could be furnished for five cents a bushel. He thought they were worth a good deal more than that for feeding. He said he used them a good deal for feeding to his horses, at night and morning, beginning with a small quantity, and when the system was adjusted to them, giving a peck twice a day, in connection with Indian meal, provender, or unground oats, and the usual portion of hay. They kept in good flesh, had a glossy skin, and were in good condition for work on the farm, or for travel upon the road. Used, say in the proportion of one-third apples and two-thirds oats, he thought they were worth half the price of oats for horse feed. This would be from 20 to 25 cents a bushel. Since he had learned their value for horses and cattle, he had ceased to have any solicitude about a market for his apples.

Mr. Wise from Shadtown dropped in at one of our meetings, and said he had used them with good results as a feed for milk cows, and for swine. He found store swine did very well in his orchard through the summer and fall, with little else besides grass, apples, and house slops. Then, when they were put up to fatten, he always cooked apples with the corn meal, provender, and roots, and considered them a very valuable ration, in connection with the other feed. They made good pork. He said he sold some milk, and thought apples were a particularly valuable feed in producing winter milk, for supplying the market, or for making winter butter, which was coming more and more into use in the neighborhood of our large towns and cities. With suitable facilities and feed, he thought about as nice butter could be made in winter as in summer, and the price was always higher. Apples and roots were a good substitute for green pastures, and with a good supply of these, the flow of milk could be prolonged for several months, and, with some change of cows could be kept up through the winter. Of course, warm stables would be needed if milk production was to be continued during the winter. He began at first to feed apples to cows, in milk, in small quantities, and gradually increased them until they had three pecks, or a bushel a day, to each cow. The milk increased in quantity, and the cows gained in flesh. There was no danger of an overplus of apples where stock was kept. He said apples were quite as good for sheep as for cows. He had sometimes turned them into his orchard to clean up the refuse apples, and they always gained flesh with this addition to their diet.

Esquire Spicer said he used apples for all stock, and found them very valuable for his poultry, especially in fall and winter. He was led to experiment with apples from the fact that his turkeys and hens were so ready to pick up his windfalls under the trees. They were good judges of fruit, and invariably took the mellow side of the mellow apples first. Their instinct, he thought, was a very good guide as to the feed they required, and when apples were plenty, he used them either raw or cooked to fatten his turkeys. If cooked with meal they make a good mush to feed warm, in the cold mornings. He always liked to have apples in the feed troughs of his hen-house in the winter.

It will be seen from this discussion that the outcry, sometimes heard, about an overstock of apples is pure moonshine. There is always use for more apples, and—more money.

*Hookertown, Ct., Dec. 1, 1880.* } Yours to command, TIMOTHY BUNKER, Esq.

## The Cuzco, or Peruvian Corn.

The first published account of the Cuzco Corn, so far as we are aware, was given by the *American Agriculturist* in 1866, in an article by the Hon. E. G. Squier, formerly United States Commissioner to Peru, describ-

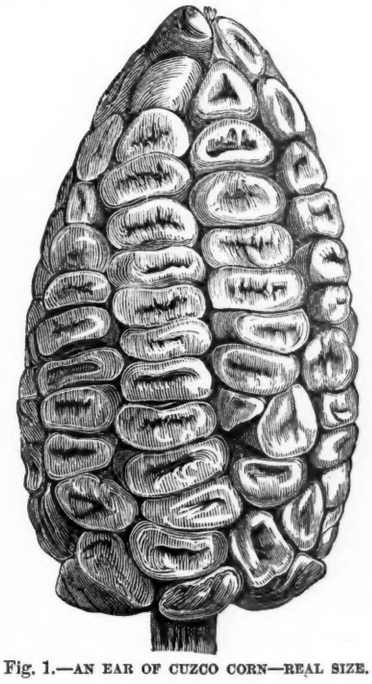


Fig. 1.—AN EAR OF CUZCO CORN—REAL SIZE.

ing its uses in its native country, and in a note by the late Bayard Taylor, who, by starting it in a hot-bed, on his farm in Pennsylvania, succeeded in having a few ears set in September. That was the best success Mr. Squier heard of from the samples he sent out in 1865; in 1866 we sent it to a number of persons in the Northern States, and we did not learn that it even tasselled in the open ground. Last season the corn was experimented with in several localities. One correspondent, "J. L. M," Washington Co., Pa., writes that at various dates in April, he planted in all about 200 hills of this corn; a portion of it was broken down by the wind, and about half of the remainder had from one to three ears to the plant. The stalks were about 14 feet high, and for the lower two feet 6 inches in circumference, with three to twelve sets of brace-roots. The lower part of the stalk was of a dark, and the upper part of a light chestnut color, with larger leaves of a darker green than the "Chester Co. Mammoth." Mr. M. succeeded in maturing a share of the ears by cutting early and ripening it under cover. He sends an average ear, some being twice the size, and others half as large as this, which is engraved in figure 1, of the real size; all were of this shape. Our correspondent thinks that after several years of acclimation he may secure a variety that will be of real value. Messrs. Squier and Taylor both speak of the excellence of the corn in its green state, a quality of which Mr. M. says nothing. In Peru there are black and yellow varieties, and it there has six, eight, and even a larger number of ears to the stalk. Indeed, the more we learn of this corn the more unlike *Zea Mays* it appears to be, and the German botanist who called it a distinct species from the seed only, may have made a good hit. When we consider that ordinary corn has developed into varieties suited to localities all the way from the Equator to Hudson's Bay, careful selection and culture may produce something of value from this; the first and most difficult step, getting ripe seed, is made; the results encourage further trials.

2 3 4

Fig. 2, RED; 3, BLACK; 4, WHITE CUZCO CORN.

**Water for Fowls in Winter.**—Poultry sometimes suffer greatly in winter through having their water supply cut off by freezing. There is some difficulty in keeping them constantly supplied with water in severe weather, but it can be done if one appreciates the necessity. A method is here illustrated which has proved of great value. A cask (it need not be a tight one) is sawed in two, and one-half used as the covering to the water jug. An earthen jug is so fastened into the half-barrel by means of cross-pieces, that its mouth will come near the bottom of the tub, upon one side—a piece of a stave being removed at that point. The space around the jug is filled with fermenting horse manure, when the "fountain" is ready for use. Fill the jug with water and cork it; then invert the tub, bringing the mouth of the jug over a basin as shown in the engraving. When the cork is withdrawn the water will flow until the mouth of the jug is covered; it will then cease, and as the water is used, more will come from the jug, and so on, forming a continuous self-acting fountain.

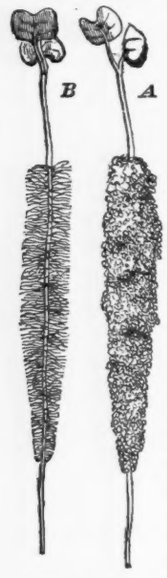
WINTER FOUNTAIN FOR FOWLS.

Such a contrivance will keep the water from freezing, except in the coldest winter weather. The jug should be emptied at night.

## Science Applied to Farming—LXVI: More About Roots.

### Roots Develop When They Find Food.

Dr. Nobbe, now director of the Agricultural Experiment Station at Tharand, Saxony, some years ago made a very interesting series of experiments which illustrate how roots develop most at those places where they find the greatest amount of food in the soil. He put some poor clay soil in glass cylinders or jars, adding a quantity of fertilizing material in each. In one, the fertilizer was placed near the center of the vessel; in another, at the bottom; in a third, around the side; and so on. Corn was grown about four months, in the jars, which were then put in water, and the earth softened, so that by gentle agitation it was almost entirely removed from the roots. These thus suspended in water, assumed nearly the position they had occupied in the soil.



1.—YOUNG PLANTS.

Wherever the fertilizer had been thoroughly mixed with the soil, "in a horizontal layer about one inch deep, the roots at that depth filled it completely, forming a mat of the finest fibres. When put half the depth of the vessel, just there the root system was spheroidally expanded. When forming a vertical layer on the interior walls, the external roots were developed in numberless ramifications, while the interior roots were comparatively unbranched. Where placed in a horizontal layer at the bottom, the roots extended down through the soil, as very small and slightly branched fibres, until they came in contact with the fertilizer in the lower stratum, where they greatly increased and ramified. In all cases, the principal development of the roots occurred in the immediate vicinity of the material which could furnish them with nutriment." The plant sends out rootlets in all directions; those finding food live, enlarge, ramify, and push on further; those finding less food develop less; those that get none remain undeveloped or perish.

Fig. 2.—ROOT HAIRS.

Dr. H. A. Cutting, State Geologist, of Vermont, known to many readers of the *American Agriculturist* as an unusually careful observer, in a private letter to the writer, mentions a curious case in point. "In Lunenburgh, Vt., in 1865, a grave was opened, and the roots from a maple tree, 65 feet away, were found all about the coffin! On opening the latter, by permission, I found it completely filled with rootlets, most of them no larger than a thread. They had made their way into the coffin, through the seams between the boards, which they had thus forced apart from one-sixteenth to one-eighth of an inch. They had of course stolen away the remains of the body and devoted them to the nourishment of the tree."

Fig. 3.—OLDER WHEAT PLANT SHOWING THE ROOTS.

The account of the apple tree roots, which penetrated the grave of Roger Williams and conveyed away his remains to nourish the tree and form its fruit, is similar, though the roots did not go so far to find food.

Roots seek water as well as the other ingredients of their food. In the city of New Haven, Conn., noted for its elms, Prof. Johnson * states that "certain wells are so obstructed by the aquatic roots of the elm trees as to require cleaning out every two or three years." Dr. Cutting tells me that he "examined elm roots taken from a wooden aqueduct in Randolph, Vt., 375 feet from the tree! In numerous places between them and the tree they had enclosed the logs at the joints."

### Fine Roots and Root Hairs.

The food which plants gather from the soil is absorbed either through the surface of the fine roots or by root hairs, so small as to be scarcely perceptible without the aid of a microscope. These root hairs are tubular elongations of the external cells of the roots.

Figure 1 is a young seedling mustard plant. *A* is the plant carefully lifted from the sand in which it grew, and *B* the same plant nearly freed from adhering soil by agitating it in water. The entire root, except the tip, is thickly beset with hairs.—In figure 2 is shown a minute portion of a root very highly magnified. The hairs, *b*, *b*, are seen as slender tubes that grow out from and form part of the cells, *a*, of the root.—Figure 4 shows the appearance of a young wheat plant as lifted from the soil and shaken. *S* is the seed; *b*, the blade; *e*, *e*, roots covered with hairs, and enveloped in soil. Only the growing tips of the roots, *w*, which have no hairs, come out free from soil.—Figure 3 represents roots of a wheat plant one month older than those of figure. 4. Not only are the root tips naked as before, but the older parts of the primary roots, *e*, and of the secondary roots, *n*, no longer retain the particles of soil—the hairs upon them being in fact dead and decomposed. The newer parts of the root alone are covered with living hairs.

Fig. 4.—YOUNG WHEAT PLANT.

Figure 5 shows root hairs and adhering particles of earth highly magnified. *A*, Root hairs of wheat seedling, like fig. 3. *B*, Root

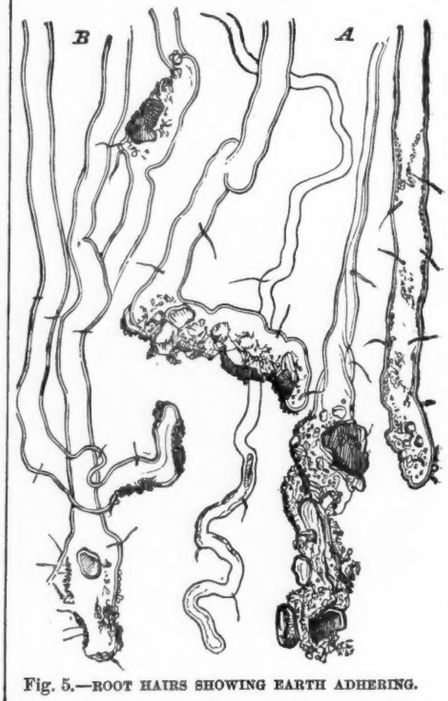


Fig. 5.—ROOT HAIRS SHOWING EARTH ADHERING.

* In his book, "How Crops Grow," published by the Orange Judd Co., N. Y., may be found some very interesting citations, from Sachs and others, concerning roots.

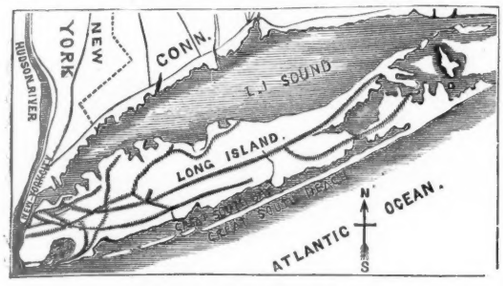
hairs of oat plant, both from loamy soil. Here the intimate attachment of root hairs to soil is plainly seen. These delicate hairs, in forcing their way through the soil at considerable pressure, often expand around and thus partly envelope the particles of earth.

The roots aid also in effecting the solution of the mineral matter in the soil, as is shown by numerous experiments of which I hope to speak another time. W. O. ATWATER,

*Wesleyan University, Middletown, Conn.*

## About Long Island.

This is, in certain respects, a remarkable bit of *terra firma*, embracing 1,682 square




OUTLINE MAP OF LONG ISLAND.

miles, or 1,076,480 acres—equal to over Ten Thousand Farms (10,764) of 100 acres each. Separated from New York City by a narrow channel, it stretches eastward 115 miles, with an average width of 14 miles, but expanding to 23 miles at one point. It lies along the southern coast of New England, separated from it by a salt water channel, from 1 to 20 miles wide. There are indications that, in the remote past, Long Island laid upon the top of what is now New England, when that country was a great deal more elevated than now, and was, so to speak, pushed down into the Atlantic Ocean, where it now lies. Geologically speaking, it was a moraine at the foot of an immense glacier that covered most of New England. Its stones and rocks or boulders, and its soil are of the same materials as now form the upper portions of New England. Go to any point on Long Island, and dig down from 4 to 100 feet or more, and you strike sea sand, of unknown depth, just like that on the bottom of the adjacent Atlantic. Most of the surface lies 10 to 100 feet above the ocean level, at a few points rising to 150 feet or more; while along some of the numerous bays that indent its border, there are considerable areas which are overflowed by salt water at high tide. These supply a grass much used for stable bedding, mulching, and is somewhat relished by animals with other feed. Along almost the entire south side is a singular bar of fine white sand, rising a few feet above the surface, and 1/4 to 1 mile wide, called the Great South Beach. It is separated from the main Island by a salt water Bay, 2 to 5 miles broad, with frequent inlets through the beach to the ocean.—Beginning with the noted "Coney Island" at the extreme southwest, and on eastward to Rockaway, Long Beach, Fire Island, etc., we have sea-side or "watering places" visited in summer by greater throngs of people than gather at any other such resorts in the world.

The soil of Long Island is various, much of it being good quality, easily worked, very productive with proper fertilizers. Other portions are sandy, and some places have not sufficient depth of water-holding loam to be always secure against drouth. The climate, modified by the breezes from the surrounding salt water, is warmer than the adjacent New England, or New Jersey at the west. On this account it is a favorable location for those desiring a milder climate than more northern localities. Lying, as it does, at the door of the Metropolitan City and its populous suburbs of Brooklyn, Jersey City, etc., Long Island is admirably situated to be a good market garden for New York. Indeed, for 20 miles or more out it is almost covered with fields devoted to garden truck, and the net-work of railways all through the island, amounting to over 300 miles, since the admirable and accommodating arrangements under the present management, brings the whole island into close and convenient access to the city markets. The western end of the island, for 30 to 40 miles or more out, contains a large number of rural residences of those doing business in New York, vast throngs of whom pour into the city early in the day, and go out at evening, and this population will doubtless largely increase.—To numerous inquiries we answer, that there is much good land still available, and farms can be purchased at as reasonable rates as elsewhere, if not more so, taking into account location, quality of soil, climate, and other advantages.

## Horse Clothing.

The inquiry comes: "What do you mean by 'horse clothing'; blankets we know, but is that all?"—No, it is not all. We have

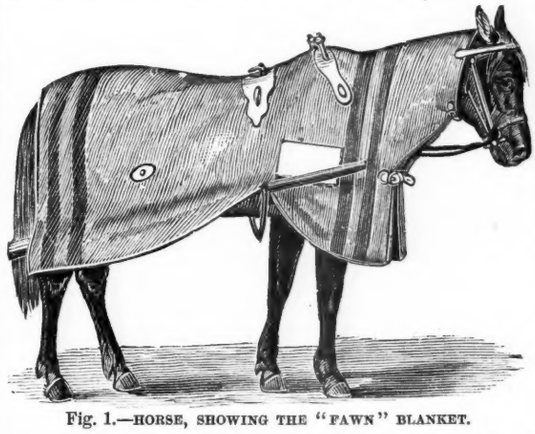


Fig. 1.—HORSE, SHOWING THE "FAWN" BLANKET.

prepared sketches of some of the more serviceable forms of horse clothing which may stand as types of the rest. Figure 1 shows a full-sized blanket, covering the neck, breast and the entire body to the croup. The blanket here drawn is what is called in New York a "Fawn Blanket," from its color. This is not fawn, but a yellowish brown, all wool, and substantial. They are usually waterproofed, and are rather expensive; still they are the most economical blankets we know of. They are used as plain, square blankets, with straps and buckles at the breast, or with none at all; or they have, as in the engraving, a strap for the forehead, at the throat, and at the breast. The harness holes are protected by a shield of russet leather on both sides, well stitched at the edges. The leather at the holes is not cut out, but a simple slit is cut for the rings, and a cross slit, like the letter X, for the ends of the hames. Similar holes are made for the saddle rings and hook. These blankets are made for single horses and for pairs, and so that they may be worn while at labor in rainy weather, the reins then being passed through the rings outside the blanket. In clear weather the horses are only blanketed when not at work. The

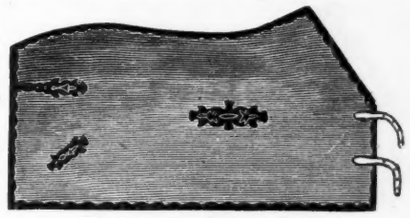


Fig. 2.—A "DRESS" BLANKET.

sketch was made from a horse standing during his noon-day rest. There are besides, shaft shields to prevent wear, and at the flanks where a small shield is seen, straps are attached by which the blanket may be fastened to the breeching, or to the shafts, to prevent its blowing up. Figure 2 is what is called a "dress blanket," of the same shape as a stable blanket, but of better stuff, and with ornamented trimmings. These are all wool, often very handsome, and not water-proofed. Blankets of the same form may be had of cheap materials in large variety. Those blankets do not cover the neck, but neck-coverings may be had which button or strap about the throat and breast, and go back as far as the withers. They are, however, rarely useful except in stormy weather, when rubber coverings are preferable.—Figure 3 is a chest protector or breast shield—a useful article of horse clothing, and which may be constantly worn, but if put on must be kept on. It is almost indispensable to city horses which have frequently to cross the ferries, for the wind which they must face on the boats is often most severe; and it is no less useful in the exposure of the country.

Fig. 3. CHEST PROTECTOR.

Figure 4 is a rubber covering for the entire horse. There is a forehead strap; there are holes for the reins to go through, and there are well-guarded openings for the harness and rings, and for a girth, or rather, these openings are provided for, and need only be cut through with a sharp knife in case the purchaser wishes to use the blanket when

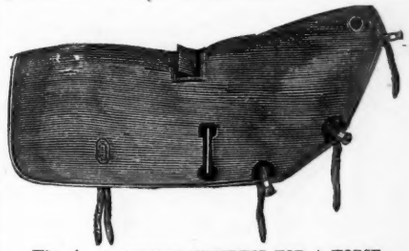


Fig. 4.—A RUBBER COVERING FOR A HORSE.

the horse is at work in harness. These rubbers are also made in two parts, one to cover the body and shoulders, the other the neck.

Fig. 1.—FRONT ELEVATION OF THE HOUSE.

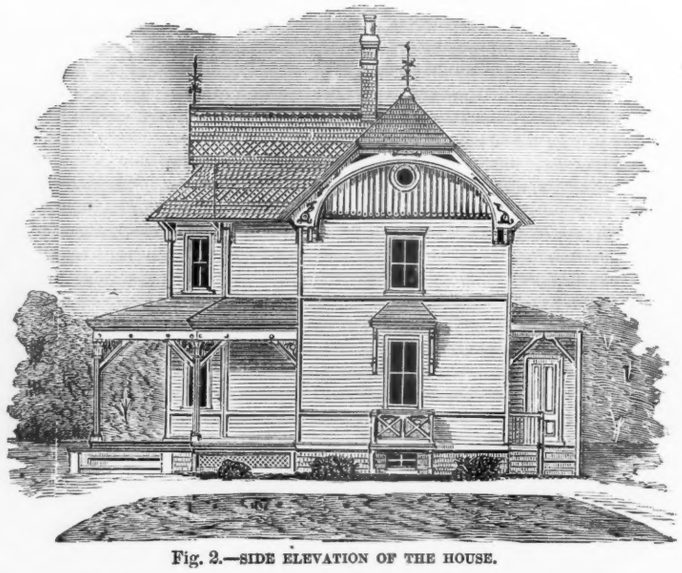


Fig. 2.—SIDE ELEVATION OF THE HOUSE.

## A Country Cottage, Costing $1,600.

BY S. B. REED, ARCHITECT.

These plans answer for a country dwelling anywhere, and are well adapted to the Middle and Southern States. They contain convenient accommodation for a family of moderate size. . . **Exterior.**—Two elevations are given. *The Front* (fig. 1) has an extreme breadth of 28 feet, with an octagonal projection in the middle, which is carried up the full hight of the main building. It is surrounded on its five exposed sides with a pleasant veranda and vestibule. The roof of the octagonal part is surmounted with a gabled "louver," giving light and ventilation to the roof story. The steps leading to the front veranda are made to conform to one of its angles, which will be appreciated by the gardener as giving opportunity for an agreeable display of taste in laying out of the grounds and paths . . . . *The Side Elevation* (fig. 2) shows a portion of the foundation, which extends two feet above ground; the arrangement of the balcony, rear entrance, and gable finish, is also given. The opposite

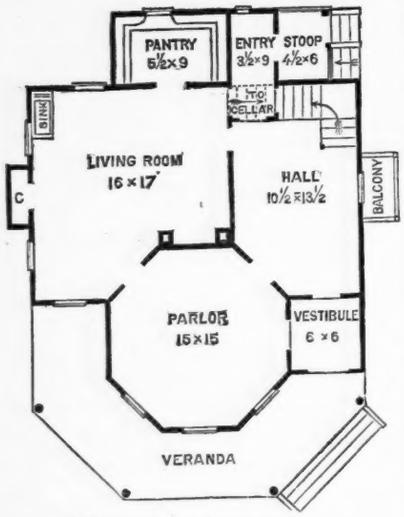



Fig. 4.—PLAN OF FIRST STORY.

end, or the side of the building, will appear similar to this, except that a closet takes the place of the balcony, and two windows are placed in the first story instead of only one. . . . **Cellar** (fig. 3).—Hight, 6½ feet. Its interior dimensions are 15 by 25 feet, giving sufficient cellar space for ordinary use. It is provided with three windows, an outside entrance, and stairs leading to the rear entry of the first story . . . **First Story** (fig. 4).—Hight of ceiling, nine feet. The principal entrance is from the veranda to a good-sized vestibule, and through it to the hall and parlor. The Hall is unusually large for buildings of this class, and is designed to be used principally as a sitting-room. It is accessible from both front and rear outside entrances, and adjoins the parlor and dining-room. The stairs have a platform near the bottom, and are ceiled up closely below the hand rail. The Parlor is octagonal, and provided with three windows and a marble mantel. The Living-room is the largest apartment, and is conveniently arranged. It has four windows, giving views in three directions; it contains a pump and sink, and has a pantry and a closet adjoining . . . **Second Story** (fig. 5).—Hight of ceiling, eight feet. There are three good-sized chambers, three closets, and a hall in this story. There are nine full-sized windows, giving an abundant supply of sunlight, and providing for thorough ventilation . . . . **Garret.**—The roof story is floored with thicknessed boarding, but otherwise unfinished, to be used for storage only. It is reached by a step-ladder through an opening made in the ceiling of the second story hall . . . **Construction.**—The foundations are of broken stone and mortar. The frame is of sawed timber; siding of nine-inch pine. The roofs of the main part are of pine shingles, a part of which are cut to pattern and laid together in courses, showing alternate belts of plain and figured work. The veranda, balcony, and rear extension roofs, are covered with tin. The chimney is carried up with two separate flues, which are connected by a breast-work in the first story, separating again in the second story, then joining again above, and passing through the roof as one chimney. The veranda is ceiled with narrow boarding overhead; the columns are octagonal, and furnished with moulded bases, and chamfered spandrells. The balance of materials may be understood from a study of the estimates appended, in which provision is made for the thorough completion of the dwelling, ready for use. **Estimates.**—The Cost of materials and labor:

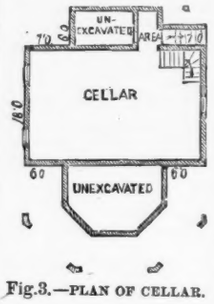



Fig. 3.—PLAN OF CELLAR.

| | |
|---|---|
| 60 yards Excavation, at 25c. per yard | $ 15 00 |
| 1,200 feet Stone Foundations (complete), at 8c. per foot | 96 00 |
| 3,000 Brick in chimneys (complete) at $12 per M | 36 00 |
| 575 yards Plastering (complete) at 25c. per yard | 143 75 |
| 4,000 feet Timber, at $15 per M | 60 00 |
| 1 Sill 4x8 in. 152 ft. long. | Ridges 2x7 in. 36 ft. long. |
| 1 Tie 4x6 in. 175 ft. long. | 26 Beams 3x8 in. 18 ft. long. |
| 1 Plate 4x6 in. 84 ft. long. | 16 Beams 3x8 in. 11 ft. long. |
| 10 Posts 4x7 in. 20 ft. long. | 14 Beams 3x7 in. 18 ft. long. |
| Veranda 3x7 in. 200 ft. long. | 8 Beams 3x8 in. 11 ft. long. |
| 100 Joists, at 15c. each | 15 00 |
| 250 Wall Strips, at 12c. each | 30 00 |
| 175 Siding, 9 inch, at 28c. each | 49 00 |
| Cornice materials | 30 00 |
| 200 Shingling Lath, at 6c. each | 12 00 |
| 35 bunches Shingles, at $1.25 each | 43 75 |
| 50 Hemlock Boards, at 15c. each | 7 50 |
| 6 squares Tin Valleys, Gutters, at $8 per square | 48 00 |
| 155 Flooring (inside), 9 in. wide, at 28c. each | 43 40 |
| 70 Garret Flooring, 10 in. wide, at 15c. each | 10 50 |
| 75 Flooring (outside), 4½ in. wide, at 15c. each | 11 25 |
| 3 Cellar Windows (complete), at $3 each | 9 00 |
| 18 Plain Windows (complete), at $7 each | 126 00 |
| 3 Gable Vents (complete), at $2 each | 6 00 |
| 19 Doors (complete), at $8 each | 152 00 |
| 2 Stairs, $30 and $10; Veranda and Stoop, finished, $50; Closet finish, $12 | 102 00 |

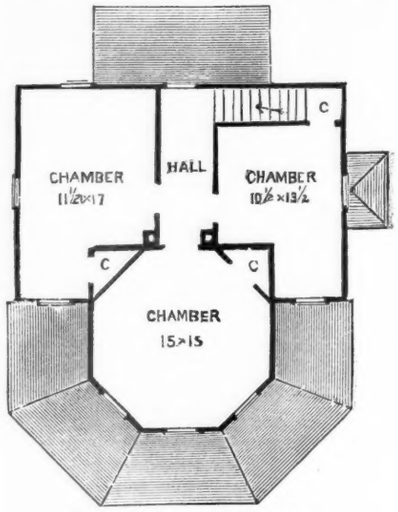



Fig. 5.—PLAN OF SECOND STORY.

| | |
|---|---|
| 1 Mantel and 4 Shelves | 30 00 |
| Nails, Pump, and Sink, and the Roof ornaments | 40 00 |
| Painting, $130; Carting, $25 | 155 00 |
| Carpenters' labor, $275; Sundry Incidentals, $53.85 | 328 85 |
| Total cost of the building, completed | $1,600 00 |

## American-bred Shetland Ponies.

We have few or no native ponies in this country. The Indian and Canadian ponies are undersized horses. Mexican and Texan ponies are like those of the Indians, simply run out or bred down in size from the force of circumstances. In the extreme southern part of Mexico and the Isthmus, there is, however, a breed of genuine ponies, it may be produced by degeneration, but still fixed in their stature and other characteristics. This lack of ponies is not due to the fact that the country is ill adapted to breeding them, but because we have never done it. In Great Britain there are nearly as many breeds of ponies as of horses; there are the Shetland, Highland, Welsh, New Forest, Dartmoor, and other ponies, each having individual merit and marked by peculiarities which give them value.

The late William Watson, of New York, well known as an importer and breeder of Ayrshire cattle, was engaged as early as 1849 in importing and breeding the Shetland ponies. His youngest son, Mr. H. R. C. Watson, continues to breed them. We present portraits from photographs of Mr. Watson's animals.

The seven-year-old stallion, "Jim," was bred by the late William Watson from stock imported by him in 1851-2. He is of excellent form and style, fine action, spirited, and docile. He is 44 inches (11 hands) high, black in color and is an attractive and beautiful animal. He proves an excellent stock-getter, as shown by the two-year-old brown filly, "Cora," also 44 inches high—a daughter of his, out of "Minnie." The other mare, "Lucy," is chestnut and white, 7 years old, 40 inches high, and was imported last summer. When bred in this country, with good feed, stabling, and care, the Shetlands lose much of the characteristic roughness and shagginess which gives imported ones such a peculiar sheepish look, and appear much more horse like, with a thorough-bred look which is quite noticeable. They grow a little larger also as a rule, but the increased size is not in all cases a disadvantage, for with it comes increased strength and speed, and adaptation to a variety of uses to which the very small ponies cannot be put. Mr. Watson's drove now consists of seventeen head, and includes a number of imported ones, added last summer. The ponies are broken to saddle and harness, single and double, are tough, and thrive on common coarse fare. We might make much greater use of ponies than we do, especially where the roads are good. The first cross of the larger pony mares with undersized Arabian stallions produces a beautiful, active pony of about twelve and a half hands high, of great style, and often of superior trotting action, and notable speed. These half-bred Shetland mares, bred to small jacks, produce small mules which are stocky and strong, very docile, and in more or less demand for use in some mines. Altogether the field of pony breeding seems to be a most promising one. Now, as to the use of ponies. We commonly regard ponies as pets for children of ten to fifteen years or so, making safe and pleasant ones; they also give them boldness as riders, fondness for animals, and knowledge of how to care for them properly. There are, however, services which ponies may perform, more safely, more quickly, and better than full-sized horses. Grocers, butchers, and other shop-keepers might make convenient use of smart, quick-stepping ponies. There is a demand for phaeton ponies, which would be greatly increased were handsome ones abundant enough to make them fashionable, and this pony-breeders should accomplish.

A GROUP OF AMERICAN BRED SHETLAND PONIES.—*Drawn by Edwin Forbes and Engraved for the American Agriculturist.*

## To Straighten and Strengthen a Sagging Barn Floor.

A number of years ago the cross-beams of the floor over the carriage-room in the horse barn became so bent downward by the weight of the hay stored upon it, that it was necessary for something to be done. If upright posts were put under the cross-beams they would supply the necessary support, but would be constantly in the way in the carriage-room. The following remedy was applied: The hay having been removed, extra cross-beams were put in over the old ones

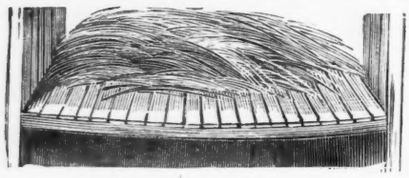


Fig. 1.—THE SAGGING FLOOR.

that were sagging. These beams were hewn from straight, thoroughly seasoned elm trees, and were made 6 by 12 inches in cross section, and placed edgewise upon the floor. These beams were considerably larger than those they were to relieve and straighten. Holes were cut through the floor on each side of the beams, at frequent intervals, for the passage of strong hard-wood cleats, 1½ inch thick, 8 inches wide, and long enough

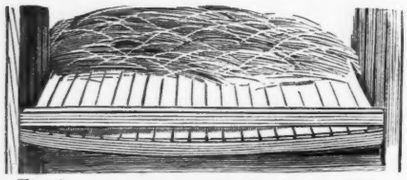


Fig. 2.—THE STRAIGHTENING BEAM IN PLACE.

to reach from the top of the upper beam to the lower side of the one underneath. These cleats had a number of holes bored in them for the reception of spikes. When all was ready, temporary posts were put in the carriage-room, under the beams, and the whole floor, beams and all, was raised by means of wedges driven under the feet of the posts. When the floor was brought to a level, the cleats were put through the holes in the flooring and fastened securely to the two beams—the cleats alternating on the two sides of the

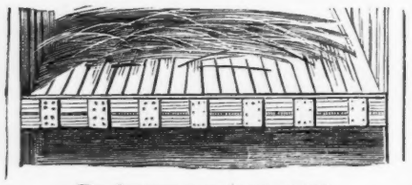


Fig. 3.—THE WORK COMPLETED.

beams. This easy remedy for the sagging floor proved a perfect success. Figure 1 shows the floor as it was before putting in the beam, and figure 2 indicates the position of the beams before the cleats were put in place. The work, as completed, is shown in figure 3.

**Water-proof Boots.**—While India-rubber boots keep out water perfectly, and are useful to put on for a short time, they are not desirable to wear continuously, as they make the feet tender. A pair of heavy leather boots, with the soles made water-proof, are better for the feet than rubber. The following is said to have been used by the New England fishermen for over a century: Tallow, 4 ounces, Rosin and Beeswax, of each one ounce; melt together with a gentle heat and add an equal bulk of neat's-foot oil. This is melted when used and applied to the boots, rubbing it before the fire; it will make them soft, and at the same time water-proof.

## Among the Farmers.—No. 60.

BY ONE OF THEM.

I have been studying some house plans lately, and for the first time in a long while have gone over and examined the plans given from month to month in the *Amer. Agriculturist.*

### Home Building

is an art which no one learns until he builds; and in truth very few learn it even then. Few persons are aware of what is really wanted in a home. There are many who agree with the principles when they are announced, but who figure and plan blindly enough.

We build to meet the requirements of our *domestic life* and of our *social life.* Everybody gives some heed to the necessities of the former, and very few regard the latter. We study the location and convenience of the kitchen and the sitting-room, and we have a parlor for state occasions, and a bedroom, all on one floor; while upstairs are the sleeping-rooms and the linen closet, and a good many put in liberal closets connecting with each bedroom. We locate the chimneys so that their warmth shall all be within the house.

All this is very well, but it is narrow. Space is economized. The "halls" are mere entries. The rooms have each their separate use, and they are isolated, and connect by single doors. Domestic life is planned for, and that is all. The housewife has every thing at her hand—stove, fuel, and water, and a good light. The dairy-room is "handy by." So are the cellar stairs, and the chamber stairs, and the clothes' yard; and the sitting-room opens out of the kitchen, and the bedroom out of that, and with a sink and pump in the kitchen, and a well just outside the door, the housewife is happy in her surroundings. The farmer glories in his barn and its contents, and is proud of his smart wife, and likes to have things handy and run smoothly. He needs the house to eat, drink, and sleep in, and as a boarding-house for his hands. For these purposes it answers well, and he is satisfied. But we well know it is

### Not all of Life to Live

as the old hymn hath it. We have a social side to our nature. Man is gregarious in a certain sense, and our houses ought to provide for social enjoyments and for social life.

*Double Doors*—folding or sliding—are a great social "institution." By them two rooms may be thrown into one. A good broad hall becomes, in summer, an extra room. The air circulates. There is a freedom and openness about the house, which gives an air of superiority to even very humble dwellings. The superiority is real too. If we invite a few friends for the evening, it is not necessary to confine them to the "parlor," but the doors are thrown wide open; our guests fill parlor and hall and sitting-room and kitchen, perhaps, and yet all are one company, for the broad doors being open the whole house is thrown together. Music sounds through such a house delightfully, and people have a good time and love to come, because it is so cheerful and social. Even a funeral loses much of its stiffness, so oppressive in the little isolated crowded rooms, if broad halls and doorways connect the mourning company of neighbors into one group.

If I study the plans of any architect, and see that they are lacking in this social feeling, his work loses interest for me at once.

### The Exposure.

Another point in our home building which we too often overlook is the exposure of the principal living and sleeping-rooms to the direct influence of the sun. The effect of sunlight is best gained when the house stands with its *corners* towards the cardinal points of the compass, as shown in the diagram, for thus the sun shines with considerable power on all sides of the house every clear day in summer, and yet his power is broken, because at noon-day the rays strike two sides obliquely, and very soon leave the south-eastern side in the shade. We should not forget that the sunshine is healthgiving; dampness and shade, if slightly in excess, injure the health of both men and animals.

One thing more, is the importance of having some provision for fires in the chambers. We build for health and not for sickness, and I do not hesitate to say that many a family

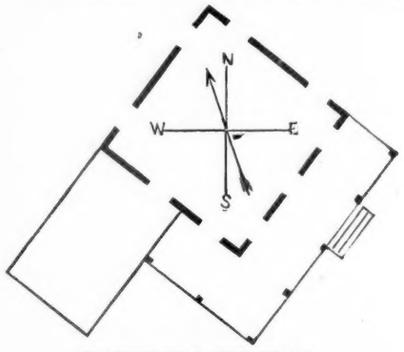



DIAGRAM OF A GOOD HOUSE.

mourns the loss of a member simply because the sleeping-room could not be easily heated.

The best mode of heating no doubt is by an open fire of some kind. It is very easy in building to make open fire-places in at least those chambers through which the chimney passes. These may be loosely bricked up, if desirable, but so that the flues may be promptly opened in case of illness.

### Chimneys and Fuel.

Chimneys ought to be built with separate flues for each principal fire. In that case the chamber fireplaces need never have their flues bricked up, but constantly open, thus affording the very best ventilation all the time. Of course open fireplaces are not economical of fuel, but in the chambers fire is seldom wanted and stoves may be set if preferred. As to economy of fuel, builders, as well as architects and proprietors, either frequently overlook one important fact, or they do not know it, that is, that the warmest part of any room is farthest from the floor; so if we make our rooms ten or eleven feet high, we must heat the air in all that upper part before a person sitting at a table begins to feel at all warm, unless he is where he gets direct radiation from the stove or open fire. Low ceilings effect the greatest economy of fuel, and even make open fires economical as compared with stoves and high ceilings. Notwithstanding that open fires always make good ventilation, while rooms or houses warmed with furnaces and

stoves usually have poor ventilation, and often are oppressive, with a stale, nauseous odor, like the dormitory of an orphan asylum. Nine feet is, I think, an extreme hight for the ceilings of an ordinary country house, say one in which the largest single room is not more than twenty feet square, or of equivalent area. For houses with rooms of medium size, eight feet is high enough.

Besides, there are numerous other considerations which tend to a saving of fuel, and at the same time increase the healthfulness and comfort of a home. Some of these are the material of the walls, their impermeability to air and moisture, "deafening" of the floors which adds greatly to their warmth, good joiner-work about windows and doors, etc. However much this matter may be discussed, I shall settle down to the fact that thoroughness in every department pays. I was in the Office and Bookstore of the Orange Judd Company a few days ago, and took up a book, just published, entitled,

"Farm Homes."

I had written just this much of my monthly epistle, and thought at once: Here is something on the topic my mind has been running upon. I read with absorbing interest the author's first chapter. It is wonderful how well one agrees with strongly put common sense. If I could write half as well I might almost imagine I had written it myself. There are six or eight plans of houses actually fit to live in—the humblest of them. The author thinks as much of folding doors, or their equivalent, as my wife and I do, and the rooms, and halls, and fireplaces are as sociable in their arrangement as groups of school girls. The book is full of good things, and will make house-building easier to many a young couple and old one too, I hope; but the first chapter is such an amplification of the train of thought with which I commenced to write, that I cannot refrain here from expressing myself about the book.

## Home-Made Bob-Sleds.

Bob-sleds, as sold in the markets, are frequently too high for handy use upon the farm. While they may serve with a light load upon a smooth road, yet, when taken to the woods to use in logging, they will soon be either much racked, or break down altogether. The low, stout, home-made pair of "bobs," shown in the accompanying engraving, will be found vastly more serviceable than those kept for sale. They are made without mortises or tenons, and with no iron except the shoes, king-bolt, and coupling clevises.

A HOME-MADE BOB-SLED.

To make such a sled requires only an auger and an axe, and a handy workman can easily complete them in a little time. In the first place select for runners small oak or sugar maple trees with a proper natural crook; these, after being hewed, should not be less than 3 inches in thickness, and as deep as desired. Blocks are pinned on each runner to receive the cross-beams. The front beam should be about 4 inches thick, and the hind one about double that thickness. The beams and blocks are securely fastened to the runners by 1¼-inch hickory pins, thoroughly wedged at both ends; the dotted lines in the engraving show the number and position of the pins. The tongues are fastened into the rollers by large wooden wedges, one on each side, and secured to each other by strong pins. The shoes may be of cast iron, steel, or thin band iron. For constant use the steel shoes last much the longest, and in the end are the cheapest and best. If well made and properly cared for by housing during the summer, a pair of such bob-sleds should last half a dozen seasons with little or no repairs.

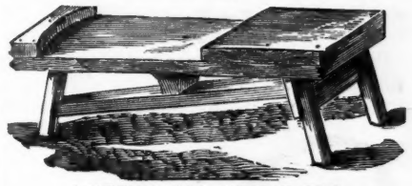
## The Fat-Tailed Sheep.

H. D. B. wishes to know if it be really true that there is a breed of sheep with tails so large that they are provided with a small cart in which to carry the appendage, or if it is merely a "traveller's yarn." The existence of these sheep is a well-established fact, and they are found in several countries in Asia, and are also abundant at the Cape of Good Hope. Whether our varieties of domestic sheep descended from one or several species, both views being held, we know that the animals can be wonderfully varied by breeding and selection, and by the influences of locality and pasturage. In various countries we have great difference in the character of the wool, in the absence or presence of horns, and in their size and number, (see an article on the Iceland Sheep in September last); the length of legs varies greatly, and in some cases there is a remarkable deposit of fat in different parts of the body, such as behind the horns and upon the rump. The Fat-tailed Sheep are rather small, with very coarse wool; their most remarkable portion is the tail, which has been known to weigh as much as 75 or 80 pounds. This great mass is largely fat, which is less solid than other fats, and in the countries where this sheep is raised, is used instead of butter. The flesh of the tail is considered as a great delicacy, and to protect this valuable part of the animal from the injuries it might receive, were it allowed to drag, a rude carriage or truck is placed under it. Having a picture of this sheep from a perfectly authentic source, we reproduce it here, that our friend and others may see how the animal is provided with a "go-cart." It is stated on excellent authority that the fat-tailed sheep of the Kirghis when bred for a few generations in Russia lose the peculiarity which had before distinguished them.

A FAT-TAILED SHEEP WITH "GO-CART."

## A Handy Milking Stool.

We have received from Mr. "E. S. C.," Rockford, Ill., an account with a sketch of a



A MILKING STOOL AND PAIL REST.

Milking Stool, intended to both hold the pail and provide a comfortable seat for the milker. Every part of this stool is so easily seen from the engraving that a description is hardly necessary. Mr. C. writes: "I think once using of this stool will convince a person that the old stools with one leg are a nuisance. They have been in use on my farm for six years and give excellent satisfaction."

## A Rail Fence Gauge.

It is a matter of both good looks and economy to have the corners of a Virginia-rail fence, on each side, in a right line. This may be obtained by the use of a very simple implement shown in figure 1. It consists of a small bar or pole, two inches through and eight feet long, sharpened at the lower end. A horizontal bar of a length equal to one-half the breadth of the strip of land to be occupied by the fence, is fastened into the upright pole near its lower end. A limb of a tree with a branch growing out at right angles may sometimes be found in the forest that will make the Gauge in one piece. In laying the fence a number, two or more, of line stakes are first set across the field on the middle line for the fence. The fence is then started by putting the first corner at a distance from the line of stakes equal to the length of the horizontal bar of the gauge, which spot is determined by setting the gauge in line with the stakes, and swinging the horizontal bar out at right angles to the line of the fence. In the same way the next corner and all others are found, the gauge being kept in the same line, the horizontal bar being swung alternately to the right and the left. The method of operation is shown in fig. 2.—We used this method on the farm 40 years ago; in recent travels we have found farmers laying up a Virginia-rail fence who had never heard of this handy device until we explained its use to them.

Fig. 1.—THE GAUGE.

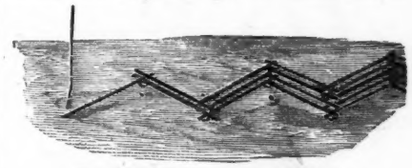


Fig. 2.—METHOD OF OPERATION.

**Foxes' Skins.**—The skin of the Red Fox is the lowest in price, bringing from

$1.00 to $2.50. Cross and Silver or Black Fox skins are much more valuable. Those of the cross bring $5.00 and upwards, according to quality, while the genuine well cured Silver or Black skins frequently sell for $50 to $100, being always scarce and of the highest price.

## A Bite, or Luncheon for Horses.

It frequently happens that a farm team must stop work in order that the driver may attend to some matter, and such times may be profitably spent by the horses if they are provided with a lunch in the way of a bite of grass or of grain. The work horses in cities are generally in better condition than those upon the farms, and this is largely due to the frequency and regularity with which they are fed. Wherever the cart-horse goes, the lunch goes with it, and the careful driver sees that the spare time is occupied. Figure 1 shows the form of a feed bag very generally used in cities. It is made of heavy canvas, with a strap or cord to fasten upon the horse's head. A circular opening is provided as a breathing place in the front, near the bottom, which is covered with wire gauze. The feed is put into this bag, and, when occasion allows, it is buck-

Fig. 1.—FEED-BAG.

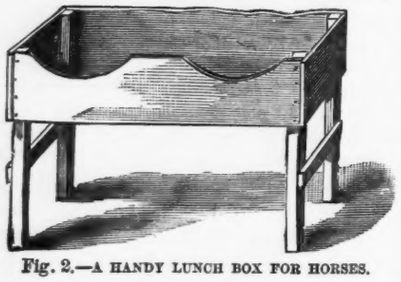


Fig. 2.—A HANDY LUNCH BOX FOR HORSES.

led in place. A movable feed-box is shown in figure 2. This consists of a box so raised upon legs that the horses can eat from it with ease. The feed-box is kept by the driver in the yard, the store basement, or other handy place, where it can be brought out when desired, and the team can eat from it while in the harness and hitched to the wagon, etc. Figure 3 shows the form of a bridle especially adapted for horses that are to be fed while in the harness, on short notice. The bit is fastened to the rest of the bridle by means of two short straps provided with buckles. By means of these buckles the bit can be easily and quickly removed from the horse's mouth, without taking off the bridle. It is a sort of halter-bridle and is shown in place upon the horse in figure 4. With feed bags or a box, as above described, and the bridle here given, a team can take a lunch comfortably and with profit to the owner. With some such contrivance farm horses, away from home at the usual nooning, can be given their bite and thus avoid the ills that result from irregularity in feeding. There is no question that double the effective work, in the long run, and double the length of years may be obtained from a healthy horse by intelligent care and feeding.

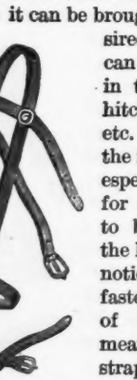


Fig. 3.—HALTER BRIDLE.

Fig. 4.—HALTER ON HORSE.

## How to make a Flat Bottom Sled.

Mr. "F. A. B.," Trumbull Co., Ohio, sends sketches and description of a sled with a flat bottom, which can easily be made on almost any farm. The materials needed are: Two runners, 2 by 6 inches, with a raise of 5

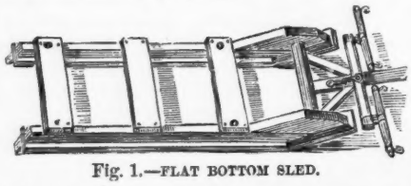


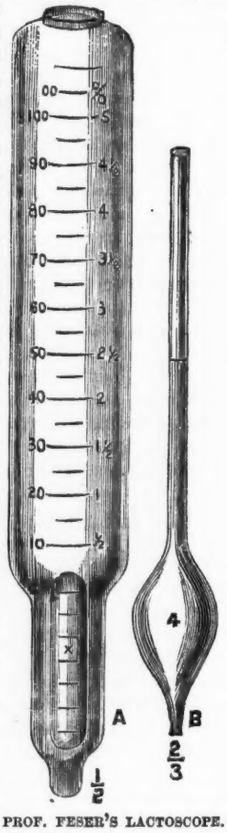
Fig. 1.—FLAT BOTTOM SLED.

inches in 2 feet and 8 inches, to make the front; two pieces, 3 by 4 inches, 8 feet long; three planks, 2 by 12 inches, 3 feet long; and two pieces, 3 by 4 inches, 2 feet long. Fourteen half-inch bolts will be needed, 1/2 by 8 inches, and two 1/2 by 6 inches. Hew the end of the 3 by 4 piece to fit the upper side of the runner. The planks are placed one a little back of the bend, one near the back, and the other midway between them and bolted fast. The two short pieces are hewed off at the ends and bolted on to receive the tongue. The runners should be short, with two-inch strips of well-seasoned wood, so put on that the grain runs downward and backward. Two-inch holes are bored in the ends of the planks for stakes. The planks may be strengthened by nailing an old horse shoe around each stake hole. The sled complete is shown in fig. 1; fig. 2 gives the manner of shaping the shoes.

Fig. 2.—SHAPE OF RUNNER.

## A New Milk Tester.

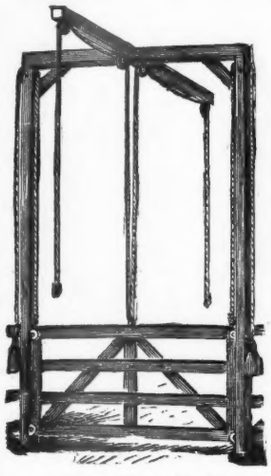
The quality of milk, that is, the amount of butter it contains, is an important matter, not only to the consumer, but to the producer who converts his milk into butter. The consumer needs to be protected against adulteration, the dairyman wishes to know which cows make a proper return for the food they consume, and there are other cases in which it is important to know the real quantity of milk. The specific gravity of milk, as tested by the Lactometer, formerly relied upon as a test, is subject to so many errors that, while it is a help, it is by no means accurate. The so-called "creamometers," while they give the percentage of cream, ignore the fact that all cream does not contain the same proportion of butter. As we were gradually settling down to the conclusion that there was nothing short of analysis—the actual separation of the butter-fat of a known portion of milk, and weighing it—could give results even tolerably accurate, here comes so high an authority as Dr. Vœlcker with an instrument which he has found to give better results than any before attained by any method short of analysis. In the last number of the "Journal of the Royal Agricultural Society of England," Dr. Vœlcker, the chemist of the Society, has a paper "On a New Method of Testing Milk," in which he describes a new instrument, Feser's Lactoscope. This instrument takes advantage of the fact that the more butter-fat a sample of milk contains, the more opaque it will be. The engraving shows at *A* the Lactoscope of half its actual size. It is a glass tube, smaller at the lower end, where it is closed, and with an opening at the top. Within, at this lower end, is fixed a small tube, *X*, closed at both ends; this is of milk-white glass, and marked with black lines. The larger part of the tube is graduated; at the left-hand side is a scale of cubic centimeters (the decimal measure), and at the right-hand a scale showing the percentage of pure butter-fat. To use the instrument, the milk to be tested is sucked up into the pipette *B*. When this is filled up to the line upon the stem, it holds a cubic centimeter, and this quantity of the milk is transferred to the instrument. The lines on *X* can not be seen through ordinary milk. Common water is now gradually added, shaking at each time, until the black lines at *X* can be plainly seen. The point at which the mixed milk and water stands on the right-hand scale, when sufficient water has been added to make the lines visible, shows the percentage of butter-fat in the milk. In this paper Dr. Vœlcker gives a number of tests made with this instrument, as compared with results obtained by analysis, and though they are not exactly the same, the agreement is very close. The Doctor sums up by saying: "In most cases it shows without much trouble in a few minutes an approach to the real proportion of butter-fat in milk, sufficiently near to enable an observer at once to form a pretty good estimate of the comparative value of different samples of milk, etc," and recommends it to the attention of all interested in dairy matters. The instrument is the invention of Prof. Feser, of Munich, and having sent for the instrument, we shall be able to know more about its working.




PROF. FESER'S LACTOSCOPE.

## A "Self-Opening" Gate.

A large number of "self-opening" gates have been invented; some are operated by a cord, which can be reached from the carriage; others have an iron lever placed in the roadway, where it may be struck by the wheel of the vehicle, and there are other devices by which the driver may open the gate without leaving the vehicle. These various contrivances seem to be defective in point of durability. Some are rendered useless by snow and ice; others do not endure the continuous blows of the wheel that are necessary to open them, and it is rarely that such a gate is met with in working order. In all such contrivances the simplest is the best, and the gate of which "C. A.," Bradford Co., Pa., sends a sketch and description, has but few parts to get out of order, and on that account seems preferable to the more complicated patented "self-opening" gates.



A "SELF-OPENING" GATE.

The gate is a light one, hung by ropes which pass over pulleys near the top of long posts, and counterpoised by weights upon the other ends of the ropes. Small wheels are placed in the ends of the gate to move along the inside of the posts and thus reduce the friction. The gate is raised by means of ropes attached to the center of the upper side of the gate, from which they pass up to pulleys in the center of the archway, and then out along horizontal arms, at right angles to the bars which connect the tops of the posts. The construction of the gate is easily understood from the accompanying engraving. By pulling on the rope, the gate, which is but a trifle heavier than the balancing weights, is raised, and after the vehicle has passed, the gate falls of itself. In passing in the opposite direction another rope is pulled, when the gate is raised as before. Mr. A. has had one of these gates in constant use for a number of years, and finds it so satisfactory that he describes it for the benefit of others.

## The Water we Need and How we Get It.

The human body is often spoken of as "dust" and as "clay," but there is a large amount of water required to moisten this clay and to hold the dust in shape. It is a well-ascertained fact that a man weighing 154 pounds has of solid parts only 42 to 50 pounds, all the rest, 104 to 112 pounds, being water, or, to put it roughly in percentage, we may say that the human body is 30 per cent solids and 70 per cent water. This water is constantly passing off from our bodies, not only in the various liquid forms that we notice, but in the exhalations from the skin, and even in our breath, as any one can see on a cool day. It is well known that a man of the average weight (154 pounds) gets rid of, in one way and another, 5½ pounds of water during each 24 hours. For him to keep in perfect health, this loss of water must be daily replaced. How is this water restored? Some may say by drinking; but it cannot all be taken into the system in this way, for few persons drink, including tea and coffee, and all such liquids, 5½ pounds, or over two quarts of water daily. Whence comes this supply of water? If not taken in as drink, it must be as food; and such is the case. The articles commonly used as food contain a much larger proportion of water than is generally supposed. That 100 pounds of turnips contain 91 pounds of water has been so often repeated that it is generally known. Lettuce is even more watery than turnips, as 100 parts of it have only 5 pounds of solid matter; but these are not usually regarded as solid food. That our bread is half water, that lean meat is about three-fourths water, and that our mixed food, taken on the average, contains over four-fifths its weight of water is not so evident; yet such is the case.

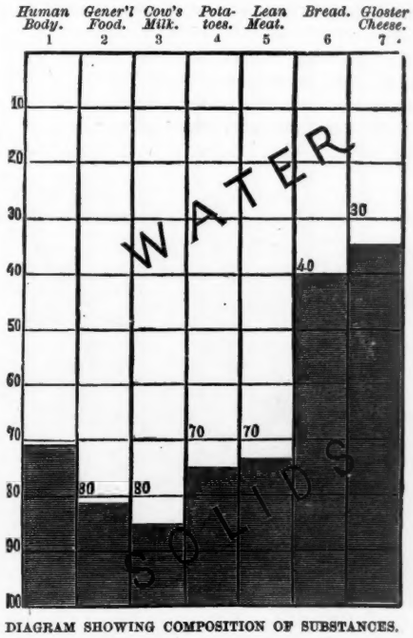
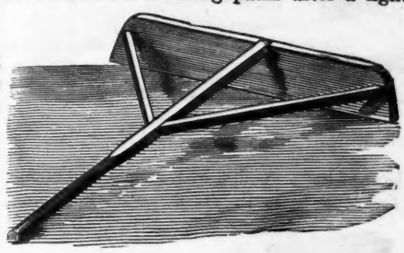



DIAGRAM SHOWING COMPOSITION OF SUBSTANCES.

We can readily see that milk is largely—often too largely—composed of water, but that dry bread should contain so much is not so obvious. The fact is that our food, that which seems driest—even hard, crystalline sugars—consists largely of water, and that wonderful chemical laboratory—the stomach, is able to separate the water from its compounds that it may supply the needs of the body. The proportion of water and solids in the human body, and that in some of the chief articles of food, are presented in the accompanying diagram. The horizontal squares give the various foods, the perpendicular squares, of which there are ten, give the proportion (percentage) of both water (in light squares) and the solid parts (in dark squares), thus allowing the eye to take in the whole story at a glance. This graphic method of presenting important facts is largely employed in that most instructive of museums at South Kensington, near London (where we obtained this table), and was used to some extent by Mr. J. R. Dodge in showing our agricultural statistics in the government building at the Centennial Exhibition. It is commended to teachers and lecturers as an effective and striking method of presenting proportions.

**The Snow Push.**—This implement is very convenient for cleaning paths after a light



A HANDY SNOW PUSH AND SCRAPER.

fall of snow. It is made by inserting a handle five or six feet long in a hard-wood board twelve or fifteen inches long and six inches wide. To make the handle perfectly secure, it should be braced by strips of wood, as shown above, where the handle is not given at full length. Such a push or scraper, but made smaller, will be found very convenient in the horse stable, for cleaning the barn floor of fine litter, moving grain, etc.

## A "Buck-Board" Wagon.

Among the many queries recently received are some as to "Buck-boards," their importance, construction, etc. The accompanying engraving gives a very clear idea of the nature of this kind of wagon. The two axles are connected by a platform of hard-wood boards, which does the threefold duty of reach, a body, and as springs to the vehicle. This platform should not be more than three feet wide, and if narrower the "Buck-board" can turn much shorter corners. The seat is placed about midway between the axles and should be wide enough for two persons, unless made for some special purpose, as for a country physician. There may be springs under the seat, but usually they are not thought necessary. With the running gear of an old buggy, a wagon of this kind can be quickly made by any one handy with ordinary tools, and at very little expense. Having had a "Buck-board" in use for the past few years we can commend it as a most convenient vehicle for use in the country. Its lightness makes it convenient to use when the roads are bad, and it allows the loading up of various articles that can not well be put in the wagon. In training a colt the "Buck-board" is a most

A HOME-MADE BUCK-BOARD WAGON.

serviceable vehicle, as it allows the driver great freedom in handling the animal and is therefore much safer than most other wagons.

## Sheep Feed Racks and Troughs.

A very simple and easily made sheep rack for hay and straw is shown in figure 1. Four

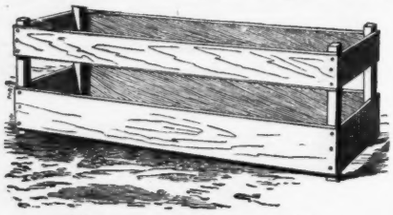


Fig. 1.—CHEAP FODDER RACK.

pieces of hard-wood, 3 by 3 inches, and about 3 feet long, make the corner posts. Four pine

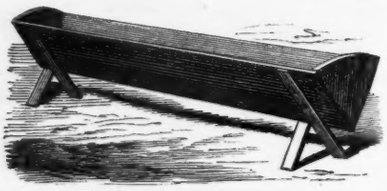


Fig. 2.—TROUGH FOR GRAIN.

boards 12 inches wide and 14 feet long supply the rest of the needed lumber. Cut off two feet from each board to make the end pieces. The boards are to be nailed firmly to the posts, leaving a feeding space between them, of from 8 to 12 inches, and this completes the rack. When screws are used instead of nails, the rack can be easily taken apart and the pieces stored away, taking up but little room when not in use. The simplest and cheapest grain troughs are made by nailing two boards together, as shown in figure 2. The end pieces may be square and extend below the bottom of the trough to serve as rests, or legs may be nailed upon the outside of the boards as shown in the engraving.

The English farmers feed their sheep largely in the open fields, and it is important that the racks and troughs be moved frequently during the winter. Figure 3 shows a wrought-iron English rack for feeding cut feed and turnips; it has small wheels for

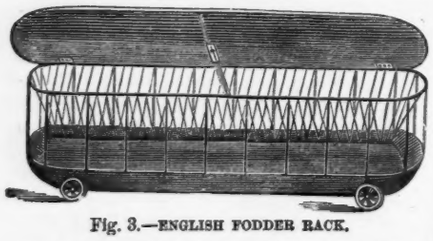


Fig. 3.—ENGLISH FODDER RACK.

moving it. This rack is also provided with a cover. Figure 4 shows an English feed trough

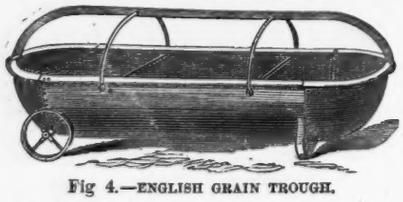


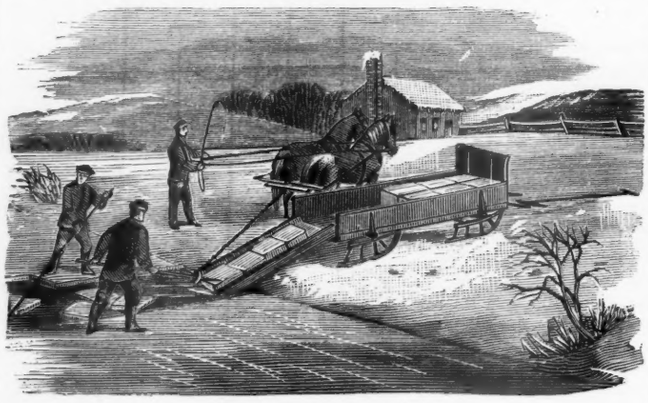
Fig 4.—ENGLISH GRAIN TROUGH.

also made of iron, with one end resting upon wheels, so that it can be readily moved.

**Source of Nitrogen.**—A cheap source of Nitrogen is in the flesh and blood of slaughtered animals. There must be horses, mules, and cattle enough die, or that are killed, to supply much of the nitrogenous manure needed. Cut up the carcasses, and with muck earth, wood loam, or something of the kind, make a compost. After six months shovel it over, and throw out the bones which have not softened, and after laying awhile to become homogenous, it will be fit for use. Dried blood, or dried flesh, etc., reduced to a powder are shipped east from Chicago in large quantities, and are about the cheapest known source of our nitrogen.

## Loading Ice with a Team.

Ice is heavy, and very difficult to handle, unless advantage is taken of the ease with which it slides over smooth surfaces. The ice-house upon the farm is seldom located upon the side of the pond or stream from which the ice is taken, and therefore the blocks must be loaded upon a wagon or sled, and drawn some distance. The loading of it from the pond is ordinarily one of the hardest parts of the labor of securing the ice harvest. The accompanying engraving shows how this work can be done with comparative ease. The ice is sawed into blocks in the usual way, and floated to the end of a shute, made of a plank with edges of boards a few inches in hight. A number of the blocks



LOADING ICE BY HORSE-POWER.

being placed in a row upon the submerged end of the shute, a man forces a spike into the rear side of the last block, and with the team attached by a rope to the spike near the base; the whole row of blocks is drawn up the shute into the box of the wagon or sled. The whole operation of loading is easily understood from the engraving given above.

## Scab in Sheep—Its Remedies.

The disease among sheep, called the Scab, is caused by a minute parasitic mite, *Acarus scabei*, so small as not to be noticed with the naked eye. The female *Acarus* is larger than the male, being about one-sixtieth of an inch in length. Figures 1 and 2 show the under and upper sides of the female mite, very much magnified. The male is shown in figure 3, drawn to the same scale. The female burrows into the skin of the sheep and produces sores in which it deposits its eggs; these hatch in a short time, and go on with the rapid work of reproduction. The sores increase in size, run together, and form scabs, and from the great itching the sheep bite and scratch themselves, sometimes tearing the wool almost entirely from their bodies. The scab appearing at first on a few sheep may spread throughout the whole flock and cause serious damage. "The animals become more and more emaciated; their wool falls off; their bodies are covered with nauseous scabby sores; their nervous

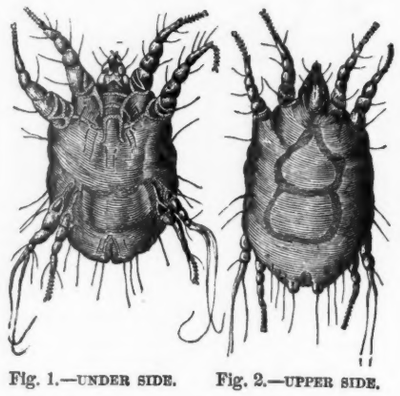


Fig. 1.—UNDER SIDE. Fig. 2.—UPPER SIDE.

system is incapable of sustaining the pain, and its functions, with those of the skin, being deranged, the digestive organs sympathize, and the sheep finally die." The remedies for scab are numerous. They have in view the removal of the cause by destroying the insect, consisting of dips and washes of various kinds. It closely resembles the Itch in man, and is more likely to come upon animals that are poorly fed and badly kept, than those in perfect health, with a clean skin, etc. Whenever the scab makes its appearance in flocks, the animals should be washed at once in one of the dips prepared especially for the purpose. In the treatment of scab, the object is to kill the insect which causes it, and those remedies found useful in itch are effective in scab. Sulphur has long been the itch remedy, but this, not being soluble, is best applied in an ointment, a form difficult to use upon sheep. Tobacco water with Sulphur diffused through it has long been used with success. An infusion is made with tobacco stems or other cheap form of tobacco, using four ounces to each gallon of water. Boiling water is poured over the tobacco and allowed to stand in a warm place for a few hours; the liquid is then poured off, and an ounce of flowers of sulphur for each gallon is added. This dip is used at a temperature of 120°, and in such a vat or other vessel as will allow of complete immersion. The sulphur, not being soluble, will soon settle, hence the liquid should be well stirred for each animal. Since the introduction of carbolic and cresylic acids, and other coal-tar products, these have been found efficacious in treating scab. Buchan's Cresylic Sheep-Dip has been before the public for some 12

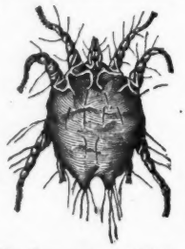


Fig. 3.—MALE ACARUS.

or 15 years, and has become a standard article. Whatever dip may be used, the application should be thorough, making sure that it penetrates quite to the skin, and that the wool is well saturated with the liquid. If hard crusts of scab have formed, they are to be carefully broken up and removed. In ten days the dipping is to be repeated to destroy the mites that may have hatched since the first operation. *Caution.*—Some of the dips that are sold owe their efficacy to arsenic. There is no doubt that this poison will kill the scab insect, but it is altogether too dangerous to the operators, to be commended, especially when preparations which do not contain this virulent poison are perfectly satisfactory.

## A Capstan Stump-Puller.

"J. E. H.," Rock County, Wis., sends a description, with sketches, of a Capstan "for pulling stumps, or grubs, moving buildings, stretching wire fences, or for any other purpose, when a long pull and a strong one is needed. It is simple and need not cost to exceed five or six dollars, aside from the rope."

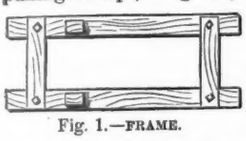


Fig. 1.—FRAME.

—The capstan is constructed as follows: A strong frame, figure 1, is made of hard-wood four by six-inch stuff, six feet long, and two feet four inches wide. Posts, three feet high, are framed in securely, eighteen inches from one end, with a cross-piece from the top of one to the other. A brace of the same size as the posts, four by six inches,

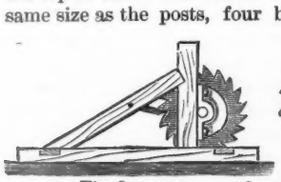


Fig. 2.—BRACE. 3.—RATCHET WHEEL.

reaches from near the top of each post to the frame, four feet from the bottom of the posts, as shown in figure 2. A ratchet wheel, figure 3, two feet in diameter, is next provided by the blacksmith. This should be of $1^1/_2$ by $2^1/_2$-inch iron, formed into a wheel edgewise, with the teeth two inches apart. Bolt the wheel on to the end of a roller one foot in diameter. Drive strong gudgeons in each end of the roller, or work wooden ones on the ends, three or four inches in diameter, and bolt on wooden boxes. A strong lever six feet long is fastened to the post, by one end, just over the wheel, with a pawl that engages in the teeth of the wheel. A dog should be placed on the opposite side of the wheel to hold it from turning backward. The puller complete is shown in fig.

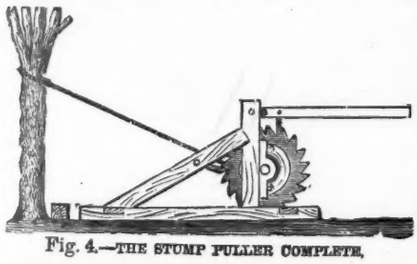


Fig. 4.—THE STUMP PULLER COMPLETE.

4. In working the puller, fasten it to a convenient tree with a log chain, and make the attachment, by means of a strong rope, to the object to be raised or pulled, the other end of which winds about the roller. "Two men, one at the lever, and another at the tree, with an axe or spade to give blows at large roots, etc., when needed, will astonish themselves with the amount of work they can do. Other work, requiring such aid, as moving small buildings, stretching wire fence, pulling up fence posts, etc., can be done easily, with this, and needs no explanation."

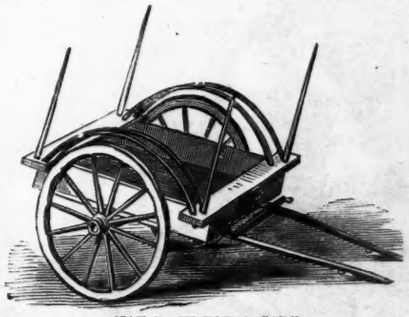
## The Potato Bug and Tobacco Smoke.

When the Colorado Potato Beetle reached the Atlantic States, the European countries were naturally alarmed lest it should cross the ocean in its devastating march. In some countries laws were passed excluding all American potatoes, not knowing the habits of the insect. The Germans, with their usual good sense, saw that the most important thing to do was to acquaint the farmers with the appearance of the enemy, so that, should it chance to appear among them, it could be detected at once and measures taken for its destruction. When in Germany, a few months ago, we learned that a prize had been offered, either by the government or by some agricultural society (we are not sure which), for the best method of familiarizing the farmers with the appearance of the insect. One person, recognizing the fact that smoking was almost universal among the farmers and farm laborers, suggested the idea of decorating the pipes of the smokers with a pictorial history of the insect. This person received the prize, and we are informed that so great was the sale of the pipes that he suddenly grew rich. However this may be, no pipes were to be found on sale at the time of our visit. At Strasburg we met our old friend, Dr. J. T. Rothrock, of Philadelphia, who was passing his vacation there in botanical investigations, and he happened to have one of these entomological pipes, which he generously gave up to us for illustration. The pipe is of the style common in the country, and carries on its surface a complete history of the Potato Beetle. Of course an engraving cannot show the whole surface; a potato leaf is given, with the eggs, the larvæ or grubs in two or three stages of growth, the chrysalis, and the perfect insect in two views. All these are in their proper colors, and each stage distinctly labelled. So well is this done, that we have no doubt that the German farmers, who happily never saw the Potato Beetle, have a clearer knowledge of the appearance of the insect in its different states of egg, larvæ, chrysalis, and imago, than have some of our own farmers who have slain them by wholesale.

AN ENTOMOLOGICAL PIPE.

## A Hay Rack for a Cart.

The accompanying engraving shows the manner of constructing a rack for a cart, upon which a load of hay of considerable size may be drawn with ease and safety. It consists of two two-inch planks, eight inches wide and long enough to reach across the cart box and project a foot on each side. Bows, to pass from the planks over the wheels, are made of four-inch hickory poles split through the center and bent to fit in their places. Four stakes, one in each corner, serve to hold the hay or straw in place. A



A HAY RACK FOR A CART.

rack of this kind will be found a great convenience upon the farm where carts are used.

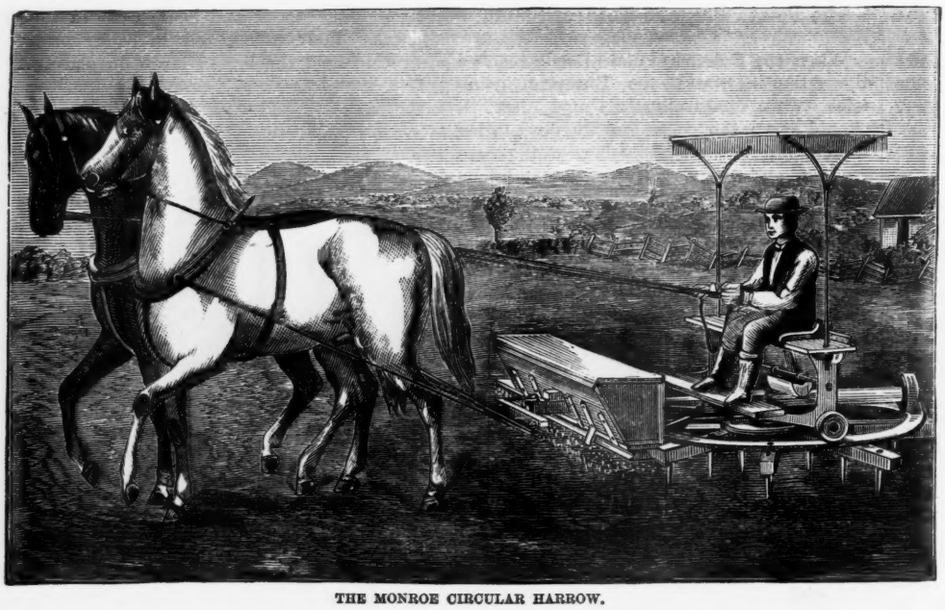
## The Monroe Rotary Harrow.

The Monroe Harrow is a flat ten-spoked wheel, without a felloe. The heavy spokes, or arms, set with harrow teeth, are bound or bolted together by a circular iron band which is bolted to the arms, near to their ends. A frame rests upon this harrow, the center being attached to the hub by a strong pin like a king-bolt. Three wheels in this frame run upon the iron band just mentioned, and hold the frame steady. The team is attached to a draft-beam which crosses the harrow, as part of the frame, and through which the king-bolt passes. When a seed-sower is to be attached, as is shown in the engraving, this draft beam is long enough to support it. Crossing the frame is a seat, and under it, hung upon a rod, is a pan, which must be loaded with earth or stones. For ordinary harrowing the pan is drawn to one side or the other, and fastened by a light chain or by a cord. Thus the harrow is weighted upon one side or the other at will. The teeth enter the soil deeper on the weighted side, and this causes the harrow to revolve. The deeply penetrating teeth move slowly and but a little way through the soil, while the opposite teeth move more rapidly and contrary to the direction of the draft. The effect of this action is to open the soil on the one side to the depth penetrated by the weighted teeth, so that grain sowed upon the surface is worked down to a somewhat even depth. On the next bout, as the harrow should lap each time, the finishing side of the harrow sweeps rapidly around, leaving the soil finely broken up, and at the same time the grain admirably covered.

The writer has had one of these harrows without the seat and the seed-sower, in use for several years, and speaks from thorough experience of its merits as a grain-coverer, and for all the ordinary uses of a harrow. On hill-sides it is especially convenient; the weight being on the lower side, the harrow keeps up, draws straight, and does excellent work. A boy of

ten or twelve years old, who can drive the team, may sit upon the seat and slide himself from one side to the other as a weight. A light man may occupy the seat if he does not weight the harrow too much for his team.

The harrow is very strong, and should it be desirable to knock to pieces and smooth off a piece of very rough land reasonably free from large stones and stumps of roots, let a man sit upon the seat, and with three



THE MONROE CIRCULAR HARROW.

or four horses, drive them at a *trot* over the ground. The work done will be a marvel.

When used with the sowing attachment the seeder is regulated to sow evenly, and the proper quantity, when the harrow laps properly on its former track; thus the whole ground is both seeded and harrowed at one operation, making exceedingly even work. The seeder is novel and very ingenious, the motion being communicated by a compound-cam movement upon the top of the harrow.

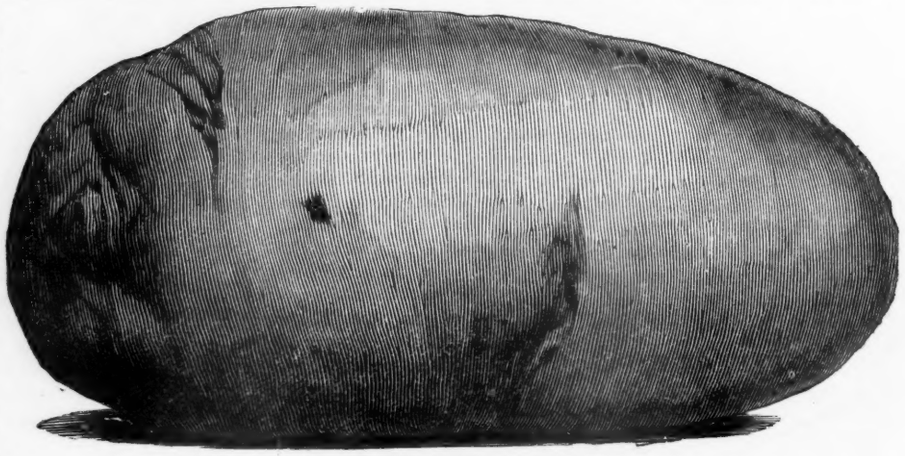
The seat, adjustable weight, and seed-sowing attachment are recently patented improvements, which add much to the efficiency and convenience of the harrow. It is now possible to adjust the amount of weight carried, as well as its position, thus easily adapting the harrow to its work, as well as to the strength of the team.

### A Rotary Cultivator.

When at the South the extraordinary efficacy of the implement as a weeder was discovered, and "narrow gauge" harrows, with plow handles, were made to use as cultivators between corn and cotton rows, they proved a great success, and Mr. Monroe states that they are in demand wherever known. Their smaller diameter gives them a greatly accelerated motion, hence their action on the soil, and their pulverizing power is proportionally increased. The good results of applying the rotary principle to cultivation between rows has led to the construction of an implement of intermediate size. This has great strength, it has long strong teeth, and is a thorough tiller or scarifier. It is a two-horse implement, which is to be well weighted, and intended, among to her uses, to be applied to preparing fallow ground for spring grain or grass without plowing, and judging from the other we have no doubt it will do it well and rapidly.

## English Potatoes and Potato Shows.

The fact that the climate of the British Isles is more favorable to the development of the potato rot than our own, makes it a matter of the first importance to secure varieties of potatoes that resist, so far as may be, this destructive malady. Both in this country and in England the first wholesale devastation of the rot (about 1845) awoke great interest in the potato, and since then the production of new varieties on both sides of the Atlantic has continued with most beneficial results. It was our good fortune to visit the Seventh Annual Potato Show, held at Crystal Palace, near London, the latter part of September last. The display of 2,500 dishes by 97 exhibitors indicated that the interest in potatoes was still maintained; the dishes, arranged on long counters and decorated with ferns and other greenery, presented a most attractive appearance. The leading contribution was made by the Messrs. Sutton, the noted seedsmen of Reading, who exhibited 118 varieties, occupying a third of the whole space of the show. Of the leading American varieties there were but few, but there were several exhibited as "American" which we had never heard of at home. The impression made by this show was, that England and America require very different varieties of potatoes. While American varieties often succeed fairly in England, English varieties are, as a rule, entirely unsuited to our country. A few years ago we planted some 20 of the then leading English varieties. They were in the same soil and had the same treatment as our regular crop of American sorts. At digging, while our own varieties gave excellent crops, the English sorts were so badly rotted as not to be worth digging. It is not too much to say that the leading potato at present in England is the "Magnum Bonum" of Messrs. Sutton. While this firm have other varieties, such as their "Red-skin Flour-ball," "Woodstock Kidney," "Reading Abbey," "Early Hammersmith Kidney," etc., each prominent for some good quality, this seems to have met with such general success as to warrant the claim that it is "the most useful potato for general cultivation." It was produced in 1871 by a Mr. Clark, of Christchurch, and has each year since given a good account of itself. The popularity of the "Magnum Bonum" is shown by the fact that for the special prize a silver medal, offered for this variety, there were no less than 53 entries. A collection sent from Prussia was interesting, as showing the manner of estimating the value of potatoes in different countries. In England, as with us, a dinner without potatoes would be considered incomplete; it is not so on the continent, where they are not regarded as any more essential than any other vegetable. Potatoes in Germany and France are largely raised for the production of distilled spirits—alcohol in some form, hence the collection referred to had each variety labelled, not with the yield, or the table quality, but with the proportion of starch it produced, as an indication of the value in distillation. Messrs. Sutton & Co. kindly forwarded to us engravings of their leading varieties of potatoes; we can make room for but one of these, the "Magnum Bonum," as our potato growers will be interested in knowing what the leading English variety is like, and especially because we have recently heard that a trial made with this variety in this country the past summer has, contrary to expectation and the usual way with English sorts, given most satisfactory results, in both quality and quantity, the particulars of which we hope soon to receive.



THE "MAGNUM BONUM" POTATO.

## New Dwarf Pea—"American Wonder."

Perhaps the greatest "Wonder" about this Pea is, that it is "American." There is no other garden vegetable in the improvement of which so little has been done in this country as for the Pea. In England several new varieties, or at least new names, are brought out every year; they are not usually any better than the old varieties, though sometimes a valuable one is produced, but they indicate a constant effort for improvement. Our seedsmen give us each year the best of the new foreign sorts; we try them once, and go back to our "Alpha," for early, and "Champion of England," for late. But now the tide has turned, England, the home of fine peas, has not for many years sent us anything in the pea line that marks so great an improvement as the "American Wonder." McLean's "Little Gem" has long stood at the head of dwarf peas, and if it bore enough pods and put enough peas in the pod, it would leave nothing to be desired. The "Champion of England," for quality and productiveness, easily stands, where it has been for several years, at the head of the late tall peas. It was a happy thought of Mr. Charles Arnold, of Paris, Ontario, to combine these two varieties. He did it, and the "American Wonder" is the result. If some seed growers were to claim to have made such a cross, we should be slow to accept the statement—the pea being a most difficult plant to cross-fertilize; but Mr. Arnold is a most skilled horticulturist, and knows all the difficulties; when he states that he has made this cross, knowing the man, and what he has done with other plants, we accept this as the origin of the new pea "American Wonder." Messrs. B. K. Bliss & Sons early recognized the merits of this pea and purchased the entire stock, and after having the pea extensively tested, introduced it to their customers and the trade. The vine is about 10 inches high, and averages, with good culture, some 12 pods to the plant, each pod being well filled with about six large peas; and it is very early. We have tested this pea for two years, last year in a most unfavorable season, and find it to be quite as productive as has been claimed, while in quality it is not to be surpassed. Not only has this pea been successful in various parts of our own country, but the reports from Australia and England are equally favorable. Indeed the trial of the "American Wonder" by one of the largest seed firms in England, led to an order for a very large quantity of the seed, at a price which goes far to offset the large sums we have sent abroad for varieties that proved to be of no use to us. In thickly settled places, it has become each year more and more difficult to procure brush for sticking the tall peas. While in market-gardens they are grown without brush, they cannot be tolerated in private gardens without a support of some kind. It is true we have had dwarf varieties these many years, but the productive ones were not good, and the good ones not productive. The "American Wonder" is both productive and good, and we look upon it as a variety that will essentially modify our methods of growing peas. If by planting closely together we can get as large a crop as by sticking, and by sowing in succession we can fill the season as completely as with the tall growing kinds, this variety will prove one of the most valuable additions that has been made to our gardens in the present generation. The engraving shows a plant of just half the actual size. The seed is now so multiplied that it can probably be obtained through most of the seed-dealers. As with all new things, the price is somewhat higher than for the older kinds. But a little seed planted on good soil, and carefully attended and saved, will furnish an ample supply for next year. [Those who got their first Early Rose potatoes at $5 a pound, were the gainers in the end, as the seed thus raised was cheaper than could be purchased.]

THE "AMERICAN WONDER" PEA.

Fig. 1.—ORDINARY WHITE MAPLE LEAF.

## Wier's Cut-Leaved Maple.—(*Acer dasycarpum* var. *Wierii laciniatum.*)

BY W. C. BARRY, MOUNT HOPE NURSERIES, ROCHESTER, N.Y.

To acquire a really valuable new tree is now-a-days of such rare occurrence that, when a novelty like "Wier's Maple" is introduced, there is cause for congratulation among admirers of beautiful trees. As this tree was brought to notice in 1873, giving sufficient time to prove it thoroughly, we may now safely venture an opinion as to its worth. Like its parent, the native Silver Maple, it has a vigorous constitution, and makes a remarkably rapid and luxuriant growth; the leading shoots push directly upwards, while the lateral branches, being slender, fall in graceful curves towards the ground. This half drooping habit is an interesting feature in this tree, while its deeply and variously cut leaves constitute one of its greatest charms, and fully justify us in ranking it among the most valuable of ornamental trees. This variety, as well as the typical form, possesses a great advantage as an ornamental tree which is not sufficiently appreciated, that is, its freedom from disease and the attacks of insects. Not alone in spring, but all through the summer, its clean, bright, delicately cut foliage has a peculiar freshness which delights the eye; though the leaves do not assume the brilliant colors for which some of our maples are so justly admired, nevertheless the rich golden autumnal tints of this tree make it a desirable object in scenery. The extremely rapid and spreading growth of Wier's Maple makes vigorous pruning absolutely necessary, and a judicious use of the knife gives the tree a pleasing outline, and tends greatly to increase its beauty. I think that all who know this Maple will join with me in commending it, on account of its graceful habit, as a fit companion for the Cut-leaved Birch. It is especially suited for planting singly in conspicuous places on the lawn, and introduced among other trees, it imparts to a group an effective variety and expression.—[We quite agree with our correspondent's estimate of this fine Maple. The normal form of the tree, *Acer dasycarpum*, known as Silver Maple, White Maple, and Soft Maple, is well known, especially in the Western States, as one of the most valuable of quick growing trees. We show leaves of the ordinary form in figure 1, in contrast with those of the variety brought to notice by our friend Wier in figure 2.—ED.]

Fig. 2.—LEAF OF WIER'S MAPLE.

## The Marsh Feverfew—"Marguerite."

It often happens that a flower of no great beauty in itself comes to be deservedly popular, because of its blooming at a season of scarcity, its long continued flowering, its usefulness in decorations, and some other qualities which make it preferable to those of more delicate form or more brilliant color. In the case of the Marsh Feverfew—*Pyrethrum uliginosum*—so far as real beauty goes, it can claim little superiority over the common Ox-eye Daisy, or White-weed, yet we find it popular abroad, because it is a very useful plant. We are aware that modern

THE MARSH FEVERFEW (*Pyrethrum uliginosum*).

botanists include the Pyrethrums as a subgenus of *Chrysanthemum*, but in garden nomenclature it is more convenient to retain the old name by which they have so long been known. Several Feverfews (so called because they were formerly used medicinally) are in cultivation; notably the Double Feverfew (*Pyrethrum Parthenium*), which, with its clusters of small, chamomile-like flowers, is to be seen in most old gardens, while its yellow-leaved form, as the "Golden Feather," is much employed in mosaic planting. The Rose-colored Feverfew (*P. roseum*), has of late years been greatly improved by florists, and there are now many double, named varieties vieing in shape, and the beauty of their many shades of color, with the Chrysanthemums. Another species, *Pyrethrum carneum*, of the Caucasus, has a commercial importance as its ground flowers form the "Persian Insect Powder," which is so largely imported and widely used, that the cultivation of the plant has been undertaken on a large scale in California. The Marsh Feverfew is a native of Hungary, and though but little known in our gardens is very common in Europe, where it is often seen in pots as well as in the borders. It is often called by the French "Marguerite," a name they apply with a prefix to several other flowers of the Composite Family. This species is about 18 inches high, has lance-shaped, toothed leaves and bears an abundance of flowers which, as seen by the engraving, may be properly compared to those of the Ox-eye Daisy. While in their general shape and color, yellow center and white rays, they are like the Ox-eye, the rays are longer in proportion to the disk, and being less stiff, the flower is not so formal. The plant begins to bloom about midsummer and continues through the autumn months, bearing cutting well and producing a great abundance of bloom. The flowers are especially valued in floral decorations, as they hold in good condition after cutting, and for this use are quite as effective as more delicate flowers that are difficult to produce. Indeed the decorative florists of New York make use of the flowers of the Ox-eye Daisy in large numbers, and it is not unusual to see great clusters of this despised weed in the stores of the city florists. This Pyrethrum is hardy and of the easiest culture, requiring no other care than to divide the clumps and re-set them when they get too large.

## Notes from the Pines.

This time the "Pines" are my own, and I here gather up a few notes on horticultural matters made in a rapid run on the continent and a few days in England *en route* for home. . . . There was nothing that impressed me more strongly while abroad than the general

**Love for and Use of Flowers and Plants.**

For example, by the advice of friends, we were in London at, what is not known with us, a "private hotel," where one has the freedom of a large hotel with the quiet and comforts of a private family. This hotel was made by uniting two private houses, and the rear passage between the two was by a glazed "annex." When we first came, we noticed the display of plants in this hall-way. On our return from the continent the whole had been changed; ivy covered the wall instead of a clematis, and the early bloomers had given place to chrysanthemums and other late flowering plants, which, with an abundance of things with good foliage, made a most pleasing show. This was the case everywhere on the continent; in every hotel, large or small, every available space was devoted to plants, and they universally graced the table even in the most unpromising wayside and out-of-the-way hostelries. Even among the Alps, the most lonely Swiss *chalet* would tell by a geranium or other plant at the window, of this universal love of flowers.

**The Flower Markets in Paris,**

as well as those in London, offer much of interest. One sees the difference between our people and the Europeans in the plants that are offered. One buys a plant with us, not so much for what it is at the time, but for what it is expected to be. Abroad the plants are bought for the present enjoyment they afford; after their prime is past, they are cast aside, and new ones purchased. Our people have not yet learned that a plant that remains in flower for a week or two is worth the sum paid for it. In Europe we see pots of China Asters, Dwarf Dahlias, and the like, having a ready sale; they are not expected to last indefinitely. In the Paris *Marché aux Fleurs* were rose-buds such as I never saw elsewhere. One cluster of the buds of that fine, but rarely seen *Souvenir de Malmaison*, I shall not soon forget. Forced Lilacs are a specialty in Paris. Even in October they were abundant. The Lilacs are forced into flower in dark houses with brisk heat, and the colored ones, with this treatment, are white. They are wonderfully delicate and beautiful.

**Among Plants for House Decoration.**

The India Rubber plant, *Ficus elastica*, took the lead. Excellent healthy plants of this, from one to four feet high, were offered by hundreds. The *Aucuba Japonica*, or Gold-dust Plant, as it is often called, was perhaps next in abundance. *Aspidistra lurida*, for which there is no common name, the green and variegated forms, is one of the most common table decorations in England and on the continent. Wishing to know if it had a common name, I asked in the Paris market what it was; the old lady looked up from her knitting and answered, "*Aspidistra lurida variegata*, m'sieur," as glibly as if she had given a French name for it. I noticed that all the market women, old and young, gave the botanical names of the plants with great accuracy. A Japanese *Aralia*, I am not sure of the species, was frequent. Gardenias, or Cape Jessamine, just ready to bloom, and small plants of *Eucalyptus globulus*, were also in plenty. Perhaps one of the most common house plants of this season, with the street venders both in London and Paris, was *Plumbago Larpentæ*, which is sometimes translated into "Lady Larpent's Plumbago." There is no reason why it should not be equally popular with us, for in point of habit, in neat foliage, and its abundant spikes of blue flowers, it has many elements of popularity, besides which it is (with me) hardy in ordinary winters, which makes it a most tractable house plant. At nearly every flower stand I saw six-inch pots of a plant with long and narrow leaves, which I could not make out. I at last inquired, and learned it was *Gazon pour les chats et les chiens*.—turf for cats and dogs, recognizing the well-known fact that these animals will, perhaps medicinally, occasionally eat grass. It seems that those who keep these animals in cities provide them with grass in pots.

**The Paris Vegetable Market,**

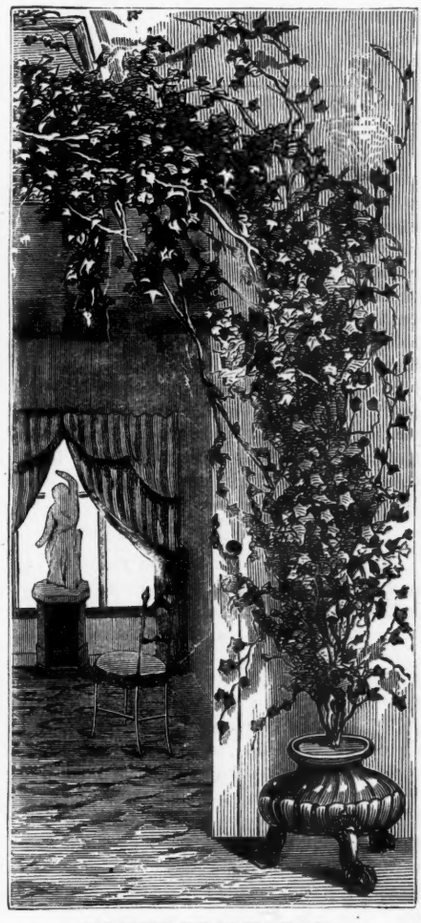
at the *Halles Centrales*, it is said, should be visited before daylight to be seen at its best, but a visit at mid-day was a succession of surprises. The building, or rather buildings, are most spacious, well covered and well floored, with its departments for meat, dairy products, fish (often alive in water tanks) and vegetables. What most forcibly strikes an American is the abundance and variety of edible fungi. Aside from the common mushroom, *Agaricus campestris*, in every stage, from the smallest "button" to the full-grown, as large as saucers, there were various other agaries, besides morels, chantarelles, and other fungi unknown in this country even by name, but affording savory and nutritious food. We have yet a vast deal to learn about the edible fungi. Great quantities of valuable food go annually to waste because we do not know the nutritious from the poisonous. Perhaps in time we shall have, as in England, our Fungus Clubs, to make annual excursions and show the people of the points they visit how to "feast and make merry" over the heretofore despised or suspected "toadstools."

### The Great Variety of Salads.

Lettuces in great variety and of a perfection of which we know nothing, almost, for the market kinds are most of them raised under a *cloche*, or bell-glass. Then, besides these many lettuces, are "Barbe de Capucin," "Scarole," Corn Salad, also Dandelion, the French name for which would shock many, and I know not what else, crowd the stands in the market in tempting array. Most Frenchmen would think they had not dined did not a salad of some kind form part of the meal. The great excellence of the vegetables in Paris is understood when one rides through the suburbs of the city and sees the beautifully-kept market gardens, each with its tank, or tanks, for liquid manure, without which the present high culture would not be possible. Near our hotel in Paris was a greengrocer, who sold a large pumpkin in slices.

## Ivy in the House.

While we cannot, save in exceptional cases, employ Ivy upon the exterior of buildings in the Northern States, we can have it within doors, and it seems strange that it is so little cultivated. There is nothing in the way of home decorations that may be had with so little expense, managed with so little trouble, or will give results so satisfactory as the Ivy. There is no room so palatial to which it may not add embellishment, and it will give an air of cheerfulness and refinement to the one room of the settler's log-cabin. Of course, we refer to the true evergreen Ivy, *Hedera*, and not to the tender plants known as "Parlor," "German," "Colosseum," and other Ivies. If one has a sprig of Ivy and a pot or a box of earth, wonders can be accomplished if the owner possesses one other requisite—patience. The growth is slow at first, but it is increasingly rapid, and each year the plant will reward patient care, by becoming more beautiful and more valuable. Perhaps the best time to begin with Ivy would be to get the plant in the spring, and to grow it through the summer, and take it in-doors in autumn. But there are so many other things to do in spring that one does not then care to prepare for winter. Fortunately, one can, but for the loss of the season's growth, just as well begin now, at the time when the desire for such decoration is the strongest. The nurserymen and florists generally have Ivy in pots, at 25 or 50 cents, according to the size. One of these can be bought, or a single cutting, a branch a foot or two long may be bought, or procured of some friend who has the plant. There are many varieties of Ivy, and much confusion as to names. The variegated kinds are not so desirable, and those with small, deeply-cut leaves are of slow growth. The large-leaved kind, known generally as Irish Ivy, is one of the best. If one gets a plant in a pot, and the ball of earth is crowded with roots, transfer it to a larger pot. But a twig, longer or shorter, with roots or without, will make a beginning, and the rest will follow. If the Ivy stem has no roots, fill a glass, a little vase, or whatever will hold it, with clean sand, stick in the Ivy, covering a few inches of the lower end, from which the leaves have been cut, and set it on the table or wherever else it will be ornamental. Keep the sand very wet, and in a few weeks, more or less, the Ivy will have thrown out roots; then transfer it to a pot of good soil, supply it with a stick to which it is to be tied, and keep it in a room that is not over-heated. Give water as needed; once a week go over the leaves one at a time with a soft damp cloth, and if any scale-lice are found, remove them with a bit of soft wood. Should the plant freeze, let it thaw very gradually, and no harm will come, unless it should be in growth. Unless in a very warm room, growth will not start until towards spring, when danger of frost is over. Should new shoots be pushing, take care that it does not freeze. The future growth of the plant is easily controlled, and should be guided according to the use to be made of it; one, two, or more leading shoots being permitted to grow, and the rest stopped by pinching their ends. When frosts are over, put the plant out of doors in a partly shady place, but where it may be cared for and the growth watched and directed. Whoever has one plant, will soon be able to start others, and several may be used to advantage. They may be trained around



POT-GROWN IVY IN THE HOUSE.

the window frame, may encircle a mirror or picture frame, may be run along the cornice or wherever fancy or taste suggests. Where adjoining rooms connect by folding doors, the openings may be festooned with the vines in the most pleasing manner. The engraving shows part of such a doorway, belonging to a friend of ours, there being a corresponding pot on the opposite side. Halls and stairways may often be decorated with Ivy; indeed, we know of nothing so effective that is so readily at the command of those who have little to expend for ornament, as Ivy. The point is to begin. Begin now.

## About New Apples.

New varieties of the apple are sent us every year, and in this year of abundance, when everything in the shape of a tree has borne a crop, it is within bounds to say that we have had at least 30 apples claimed to be new—most of them fruit of excellent quality—and if one has the tree he is fortunate. Some of these apples have been sent with the request that we figure, describe, and name them; others state that they have the original tree, and wish us to inform them of some nurseryman who will propagate it "on shares"; others offer to send grafts to whoever will apply. The fact is that in all of the older States there are apples which are either seedlings, and consequently new varieties, or have been propagated from trees brought over in the "colony times," and are not known to our pomologists. In some neighborhoods of northern New Jersey, there are scores of varieties, with local Dutch names, that are not known elsewhere. There are now in our Pomological works over 2,000 varieties of apples recorded and described. Those who have given the most thought to the subject are convinced that a list of 100 varieties, and some place it as low as 60, will contain all that are really desirable for all seasons, in all parts of the country. Taking the larger number, 100, we have then over 1,900 named and described varieties which might be dropped from the list, and from cultivation, without detriment. The American Pomological Society has on its catalogue about 300 varieties, concerning which it is desirable to have information from all parts of the country. It by no means commends all these, for each year many are stricken from the list, and a few are added on probation. Moreover, our best nurserymen offer fewer varieties than they formerly did, yet even now, if a novice would make a selection he is embarrassed by the number from which he has to choose. In view of all this, while we are always pleased to see new varieties that are esteemed by our friends, we must generally decline to comply with their requests to figure and describe them. Considering the best interests of the community, we have come to the conclusion not to add to the thousands of names, unless some variety should come to our notice that is positively superior in some quality, whether of the fruit or the tree, to any other variety of the season now known to us. Those who have choice unnamed varieties are to be congratulated; and such may often be advantageously distributed in their neighborhood, but it is not well to add to the already cumbersome list of apples without good reason.

**Seedling Pears.**—Correspondents who have young pear trees raised from seeds, ask us if, by inserting buds or grafts from them upon old and bearing trees, they cannot get their fruit sooner than to wait until the seedlings come into bearing. Certainly, the fruiting of the seedlings will be much hastened, and still more so if they are budded on quince stocks. These methods are often resorted to by those who raise seedling fruits, but how much may be thus gained cannot be foretold; the seedlings differ greatly as to the time required for them to bear on their own roots, they would similarly vary when worked upon a stock. The same may be done with seedling apples and other kinds of fruits.

# THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

## Freshly Ground Black Pepper.

It is just possible that there may be such a thing as pure ground spices, but those who know the ways of the spice and drug mills will not feelvery confident that what is sold as ground pepper, for example, may not be largely ground ship-bread or other harmless substances. Even where the pepper already ground is pure, its long exposure in the state of powder causes the loss of much of its aroma. The French avoid both adulteration and deterioration by grinding the pepper as it is used. Instead of the pepper caster at the table they hand one the Pepper Mill, and the pepper is ground then and there as it falls upon the food. The engravings show the affair—about half size, in fig. 1, as it appears upon the table, and fig. 2 in section shows the interior. At the bottom is a small iron mill, constructed like a coffee-mill in miniature, the grinding surface of which is moved by a rod that passes up through the top where a screw regulates the fineness of the grinding. The mill is operated by moving the cover or projecting rim at the top, a half turn supplying quite as much pepper as one would care for at once. The delightful odor that is given off by the pepper at once attests its great superiority to the article ordinarily used. Here is one "notion" that is not of "Yankee" origin, and one which our makers of such things may well adopt.—Since the above was in type we learn that the mills are to be made here.

Fig. 1.—EXTERIOR OF PEPPER MILL.

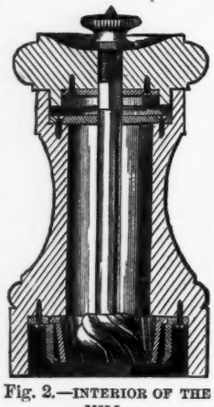
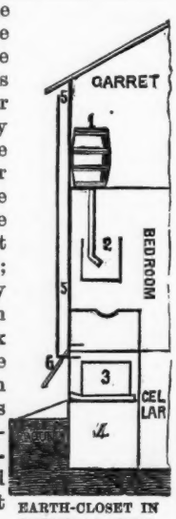


Fig. 2.—INTERIOR OF THE MILL.

## Home-Made Earth Closets.

If we mistake not, the *American Agriculturist* was the first journal in this country to call attention to Moule's invention of the Earth Closet, and it has continued from time to time to advocate this method of treating a household waste that is often sadly neglected. The use of dry earth in closets is not patented, it is only the machinery by which the earth is applied that is patented by several inventors. We have shown at various times simple methods by which all the benefits of the system are placed within the reach of every one. That there is still a necessity for a more general adoption of the earth closet, as everyone who travels much about the country must be aware, and we are glad to know from our correspondents that there is still a wide-spread interest in this most important sanitary matter. We have at hand suggestions from correspondents as to the use of dry earth; one for a closet within the house. "A. J. W.," Lakefield, Ont., writes: "I am in perfect accord with 'Among the Farmers,' in regard to privies. The horrible vaults in use in this country I style *fever holes*. I send you a sketch of my plan which works admirably. One corner of my bedroom is partitioned off for a closet; the cellar is beneath. I therefore had a pier built of stone to support the box for the deposit. The box is fastened securely on a stone boat. When I wish to empty the contents, I back up my horse to the opening, raise the door which is hinged above, and draw away the stone boat and dump the contents. If those using the closet are careful to place a scoopful of earth in the box every time, there is never the slightest odor or annoyance. I hope my rough sketch may prove useful to some other health-loving farmer like myself." In the sketch, the partition between the closet and bedroom is not shown; 1 is a barrel filled with dry earth, which falls through a tin tube into 2, a box attached to the wall of the closet, and is provided with a scoop or ash-shovel; 3 is the box for the deposit, upon a stone-boat; the receptacle for this is separated from the cellar by a tight brick partition; 4 is a stone foundation for the box; 5 is a pipe for ventilation; this opens into the space below the seat, and terminates near the eaves; 6 is the door through which the box is removed.




EARTH-CLOSET IN SECTIONAL VIEW.

## To Keep and Use the Apples.

Apples are now abundant on many farms, and all can still obtain them quite cheaply. But they will soon begin to decay, unless good keepers, and great care be exercised—such care as few can give. An experienced matron, of much skill, in response to a request from the *American Agriculturist*, supplies the following: We keep our apples in the coolest, dryest place we can, where they will barely escape freezing. I have them looked over very frequently, and take out every one at all likely to decay because of its kind, or from bruises, and preserve these either in the form of apple sauce or apple jelly.

APPLE SAUCE: This I prepare just as any one else does, I suppose, all ready for the table. That is, I pare and core the apples, remove every particle of skin, core, and dark-colored portion, and cook well in only as much water as is needed, and add sugar as desired. All the sauce not wanted for the table or pies within two or three days, I put at once into the common fruit bottles and close them the same as for canned fruits. I thus have on hand a stock of sauce that will keep a month or a year, and be always ready on the instant for the table or for pies.

APPLE JELLY is very acceptable in our family, and is easily made and kept. To make this I prepare the apples as above, adding a little more water in cooking than for ordinary sauce. When thoroughly cooked I strain it through a flannel bag (a cotton one will do). The clear juice I boil 10 to 15 minutes, and add 12 to 16 ounces of white sugar to each pint of it, according to its tartness. Then boil 15 to 20 minutes more, or until a little, cooled in a spoon, shows that it will stiffen. It keeps well for any length of time in bowls or tumblers, or in any cups, with paper pasted over to exclude the air. We like it flavored, either by stirring in lemon extract after the last boiling, or lemon juice may be used, though this thins it somewhat and may prevent its jellying without more boiling. Instead of lemon flavor, some prefer putting cinnamon sticks in when boiling.

APPLE BUTTER is made by boiling down new cider to about one-fourth its bulk, and then adding sliced apples, and cooking slowly with careful stirring until they are thoroughly done. If sweet apples are used, the addition of a few quinces greatly improves the flavor. This requires no sugar, and is one of the most economical as well as most healthful of all preserves for children. If kept in a cold room there is no danger that it will spoil.

## Home Topics.

BY FAITH ROCHESTER.

### How to Treat Frost-Bites.

If any part of the body gets frozen, the very worst thing to do is to apply heat directly. Keep away from the fire. Use snow if you can get it; if not, use the coldest possible water. Last winter our little boy of five years froze his feet while out coasting at considerable distance from the house. He cried all the way home, and the case seemed pretty bad. I brought a big panful of snow and put his feet into it, rubbing them with the snow. But my hands could not stand the cold. I was alarmed to see him keep his feet in the snow so long, but he could not bear them out of it. It was half an hour before he would take them out, and then the pain was all gone, and when I had wiped them dry and rubbed them a little, he was entirely comfortable, put on his stockings and shoes, and went to play. He never afterwards had any trouble with his feet on account of this freezing. His sister got her feet extremely cold, and put them at once to the fire. Her case at first was not so bad as her brother's, but the result was much worse. Her feet were very tender all winter, and she suffered from chilblains. Her toes had a swollen purple look, and she had to take a larger size of shoes.

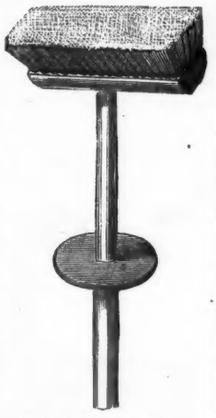
### Winter Butter.

How difficult it is to get good winter-made butter. Often I know by the taste just where the difficulty lies. Butter-makers sometimes let the cream stand too long before skimming, and one can hardly believe, from the taste, that their butter is really fresh. Sometimes a bitter flavor comes from lack of care in keeping the rising cream undisturbed. The pans are dipped into, and in skimming for butter the second rising over a part of the pan, which has a somewhat bitter flavor, goes in with the better cream, and spoils the taste of the whole. Then the cream may be kept in the jar too long before churning, while the butter-maker waits for enough cream to accumulate to make it worth while to churn. It would be better in this case to bring the butter by stirring it in the jar with a ladle or pudding stick, if enough cream

cannot be gathered within a week (at longest in cold weather) to fill the churn so as to work it well. In this case, skim the cream off very slowly, or free from milk, and if you stir each skimming in with the others as you put it in the jar (this should always be done), and then warm the cream moderately before churning, it is no difficult task to bring the butter by stirring. I have eaten excellent butter made in this way. Some persons never make good butter in winter, because they keep their milk among bad odors, as in a cellar with turnips and other vegetables.

## A Water Guard to a Window Brush.

When windows are washed with a long-handled scrubbing brush or broom, there is often great discomfort arising from the suds and water running down the brush handle and upon the hands and clothing of the operator. This can be avoided by a simple device shown in the engraving. It consists of a ring of stout leather, cut to fit closely upon the handle, and placed a foot or so below the head of the brush or broom. The water coming down the handle meets with the lateral surface of the ring, and is carried off on the side towards the window and away from the one using it. A similar ring of rubber would answer the like purpose. It is a small affair, but the ease and comfort of much domestic labor depends upon attention to trifles.



A GUARD FOR A BRUSH.

## Some New and Valuable Recipes.

**Lemon Meringue** (*Pronounced Me-rang*),

Contributed to *American Agriculturist* by a Western housekeeper: Put into a quart of milk, 1/2 teacupful melted butter, 1 cup sugar, 1 cup of bread crumbs, yolks of 3 eggs beaten, the juice and half rind of one lemon grated fine. Stir together well, and bake in a pudding dish to a light brown. Then beat the white of the 3 eggs to a foam and stir into it a cup of pulverized sugar. Spread it over the top of the pudding and sprinkle a little sugar on. Then bake slightly, to a light yellow.

**A Cooked Icing—Good and Economical.**

Another reader of the *American Agriculturist* sends the following two: Put in a sauce-pan one cup of pulverized or granulated sugar, and half a cup of water, and stir until it boils. Then add the white of one egg, beaten to a stiff froth; heat to scalding; remove from the fire and continue the stirring until it is nearly cold. (The cooling can be hastened by putting the sauce-pan into cold water.) Spread it over the cake while it is still warm, and it will form a nice coating. It is also good to use between the layers of cake like the one described in the next item.

**Layer Cake.**

Beat together 1 1/2 teacupful of white sugar and 3 tablespoonfuls of butter, and add 3 well-beaten eggs, 1 cup sweet milk, 3 cups of flour, and 3 teaspoonfuls of baking powder. Beat the whole well, and bake in 3 or 4 layers, in jelly-pans or pie-tins. Spread each layer with the above "cooked frosting," or with any jelly that one may have prepared, and place the layers together, after which dry or bake slightly in the oven.

## Cooking A Turkey.

There is roast turkey, and roast turkey, but there is a wide difference even when the birds are of like age and quality, depending wholly upon the skill in the kitchen, or of its superintendent. A lady who is reputed to always have "good roast turkey," at our request kindly wrote out the following for the *American Agriculturist:* "Unless it is badly soiled, never soak, wash, or wet a turkey, as many do. Indeed washing injures any kind of meats and fish, except those kept in salt brine. Carefully draw the turkey, and wipe thoroughly inside and out with a dry towel. It will thus keep longer uncooked, and be better flavored.—If it chances to be a tough one, steam it an hour or two, as needed, before baking. If one has not a steamer large enough, as few have, it may be done in a wash-boiler, supporting the bird above the water on a couple of inverted basins, or suspending it by strings from the handles.—My family has learned to like plain stuffing rather than the highly seasoned, rich, indigestible dressing so much in vogue. I use stale bread chopped fine, just moistened with scalding water, not to a "mush," and add a little butter, salt, pepper, and, if desired, a small pinch of Sweet Marjoram or Thyme. Most like Summer Savory, but we omit it, because not relished by one of the family.—After stuffing and sewing, fasten the wings and legs down closely with skewers or by tying with strings. Roast in the dripping pan *without water*. To keep the skin from scorching, baste now and then with a little water seasoned with butter and salt. Bake through uniformly to a light brown, avoiding burning or hardening any part.—A good oyster stuffing, when easily obtainable, is liked by many, as follows: Drain off most of the liquor from the oysters, season with sufficient butter and pepper, and roll them in cracker or bread crumbs. Fill the cavity of the turkey entirely with these."

## Mixing Bread with a Machine.

One of the latest household appliances is a Bread-mixer. There are no doubt many who will declare in advance that such a machine is useless, that it is undesirable, and that the bread must be kneaded. There are often reasons why the hands should not be put into the bread, both out of consideration for the hands, and for those who are to eat the bread, and if for no other reason than this, it is desirable, in case of necessity, to have a kneader. That it is not necessary, in order to have good bread, that it should be mixed so stiff as to require hard kneading over the board, is shown by the fact that some persons mix their bread altogether with a spoon. That good bread may be made when the dough is so stiff that it requires the full strength of the bread-maker to knead it, we are well aware. When the Stanyan Bread-Mixer came, we tried it, following directions. The usual method of bread-mixing was departed from in keeping the dough thin enough to be worked with the "Mixer." The "Mixer" consists of a pan to hold dough and a broad, lozenge-shaped revolving knife to do the mixing. Fig. 2 shows all the machinery there is about it. The platform *A*, holds the pan, and is made fast to the table by the clamp and thumb-screw. The post *B*, carries the knife *C*, which has a long shank passing through the box *F*, to the end of which the crank is attached. The box, *F*, is movable and by tipping it the knife is

Fig. 1.—THE STANYAN BREAD MIXER.

lifted out of the pan. The "Mixer" being secured to the table, with the pan in place, as in figure 1, the liquid—water or milk, or both—is first put into the pan, and the yeast and flour are added. The crank is at first turned slowly, moving the pan around by hand, but as soon as the flour gets moist the pan is moved by the motion of the crank; when well mixed, scraping the dough from the sides of the pan, and from the knife once or twice with a wooden scraper, it is put aside to rise. In the morning, or when it is raised, the dough is stirred again with the knife, and transferred to the baking pans by the use of the wooden scraper. If the dough is mixed thin enough, it need not be touched by the hands. In the first trial, we had some misgivings, on account of the lack of stiffness in the dough, but when the bread came to the table it bore witness that our fears were groundless. The result was as near perfect bread as poor mortals can expect. As to the comparative ease as between mixing bread with the Stanyan Mixer as a regular thing, and moulding it in the usual way upon the board, we are not prepared to say. But we do know that as good bread as ever was eaten can be made, without touching the dough with the hands, by the use of the Mixer. This will commend the Mixer to many who are not sure of the cleanliness of their "help," and in cases in which the hands are cracked or otherwise unfit to use in kneading that which is to be eaten. The

Fig. 2.—STRUCTURE OF THE MIXER.

peculiar shape of the knife allows the dough to be both cut and beaten in the most thorough manner, and thus incorporate the air with it, a point essential to the best results, in whatever way the bread may be mixed.

# BOYS & GIRLS' COLUMNS.

## The Doctor's Talks.

### About Your Eyes.—Insects, etc.

This time we will have a Talk about insects, and answer questions about specimens that have been sent. I am glad whenever any of you wish to know the name of a plant, an insect, or other natural object, and am always willing to help you all that I can. A great many—indeed, the larger number—of our boys and girls live in the country. I have seen many who were born and grew up to be men and women in the country, who do not appear to notice a plant, or a bird, an insect, a stone, or any such object. I always think what dull and dreary lives their's must be; to how much that is beautiful and wonderful do they shut their eyes! Such persons might just as well live among the brick walls of a crowded city for all the enjoyment they have of a country life. These people have eyes, but they have never learned the full use of them. Nowhere is there more need of eyes, properly trained eyes, than in the country, and it is to help you to use your eyes that I now and then talk about plants, insects, and other such things. Many are prevented from studying natural objects through fear of hard names, and others because they have not the proper books, or cannot give the time to such studies. Now, I do not expect that our boys and girls will, as a general thing, become students of science. There are two ways in which to study natural objects; one of these very few will follow, while the other is open to *all* of you. Let me illustrate this in the case of insects. One person carefully examines all the parts of an insect; the shape of the different parts of its mouth; the number of joints in its leg or in its feelers; the veins in its wings, and a great many other things about the anatomy of the insect. He sees how these parts in one insect agree with the same parts in other insects, and from these resemblances he places them in families, genera, and other groups, and thus classifies and names them. Another person notices at what season the insect makes its appearance, upon what plants it feeds, whether it is active by night or in the day; when it changes from a caterpillar or grub to a chrysalis; where it hides, what enemies it has, and what injuries it does. These, and a great many other things, can be learned from the insect itself.

### You Do Not Want a Book

to tell them, and, while it would be interesting to know the name given to a particular insect, all these and other points in its life history can be learned without the name. It is this using your eyes and learning from the insect itself that I wish to encourage. Not only will what is thus learned be *interesting*, but the learning of it will be *useful* to you. If you carefully observe an insect and note the color or marks in which it differs from a similar one, that education of the eye will make one, if he afterwards should become a merchant, a better judge of woollens or furs, of grain and sugar. The proper use of the eyes is needed in all occupations, and in none is it more useful than in that of the farmer. So, my New Year's greeting to you is—*learn to use your eyes—to observe.* Then, if you wish to know something about the plant, the insect, the stone, or whatever it may be, that your eyes do not tell you, I will try to help you to it. . . . The first is from a boy of eleven, who sends, in a neat box, a large insect, asking what it is. It proves to be

### "The Gigantic Water-Bug,"

and belongs to that group of insects which includes the plant-lice, locusts, harvest-flies, leaf-hoppers, squash-bugs, the destroying chinch-bug, etc. It is not a beetle, but a true *bug*. Many call all insects either butterflies or bugs, but, the name *bug* belongs only to those insects which have no jaws, but live by sucking the juice of animals and plants, first piercing them with their beaks. They do not pass through the three distinct states of larva, or "worm," of the inactive pupa, and of full-grown mature insect, as do the beetles. The young, half-grown, and mature bugs are much alike, and equally active. Most of the water-bugs swim on their back, using their legs for paddles. There are several kinds of these bugs, differing in size and in other particulars. There is one even larger than our engraved one, as it measures four inches long. The entomologists have given bugs of this general make-up the name of *Belostoma*, which is formed by putting together two Greek words meaning *dart* and *mouth*. The long, sharp-pointed sucker, is not seen in the engraving, because, when not in use, the insect hides it by folding it back under its chest.

THE GIGANTIC WATER-BUG.

It is this weapon that makes the insect very destructive to young fish, of which it is said to destroy great numbers. Boys, when wading in ponds, have sometimes learned how sharp a wound this dart can give, the insect possibly mistaking their bare feet for something eatable. Several times this water-bug has been sent with the information that it had suddenly appeared in great numbers, in places where they were not known before. This sudden appearance is owing to the fact that they leave a pond at night, in large numbers, and take long flights, probably to find another pond. When on one of these journeys, a sudden shower or gust of wind sometimes stops their flight, they must alight, and often to the astonishment of the people.

### Bread Made of Insects' Eggs.

In Mexico the eggs of a related water-bug are deposited in immense numbers on the sedges and other plants that grow in the ponds. These eggs are collected and made into a cake which is used as food by the Mexican Indians, who are fond of it.

Another insect came in a wooden match-box, but I have mislaid the name of the sender. Below (fig. 2) is its portrait, of the real size. The hinder part of the body is black, with bright yellow bands; the fore part is rust-colored, and the wings are smoky brown. At the end of the body is a short horny point, which is not seen in the engraving. It could not be shown distinct from the *ovipositor*, or egg-placer, which consists of a borer or awl, very highly polished, and roughened and toothed around the lower end; this is attached near the middle of the body, and there are two side pieces which form a sheath for it, when not in use. The end of this awl projects beyond the body. The insect is the

### Pigeon Tremex.

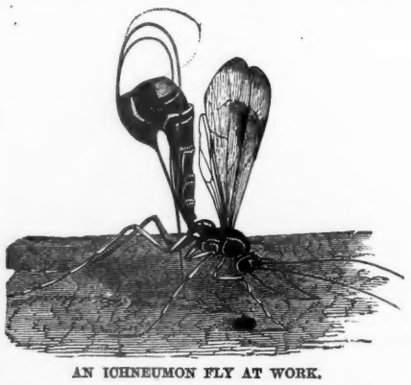
The scientific name is *Tremex Columba*. Tremex means *a maker of holes*, and columba, *a pigeon;* the reason for giving this last name is not plain, as there is nothing pigeon-like about it. This insect bores holes through the bark and into the wood of

THE PIGEON TREMEX (*Tremex Columba*).

various forest and fruit trees to the depth of half an inch or more, puts an egg into the hole, and then bores another one. Sometimes the awl is driven in so tightly that it cannot be drawn out, and the insect, thus made fast, must die. The eggs hatch, and the grub feeds upon the wood of the tree until it has made its growth; it then forms a chrysalis, and finally comes out of the tree as a perfect insect, to go on with the destructive work again. How long it takes for these changes is not well known. Large numbers of the grubs in a tree of course must greatly injure it, and the insect is to be regarded as an enemy. Fortunately it is not likely to increase to any great extent, as it has its insect enemies in

### Some of the Ichneumon Flies,

which are related insects. Some of these have borers three and four inches long; they seem to know whereabouts in the tree to find the grub of the Pigeon Tremex, and they bore for, and, having reached it, place an egg, not in the wood of the tree, but *in the body of the grub!* Figure 3 shows a *Pimpla*, one of these Ichneumon flies, in the act of boring, its long awl being as slender as a horse-hair. I am sorry to say that this friendly insect sometimes is unable to remove its awl, and, like the injurious one, meets its death. When the egg of the Ichneumon fly has hatched, its grub feeds upon the grub which holds it, and by the time it has killed that, it is full grown, and ready to change into a perfect Ichneumon fly. These insects are called Ichneumon flies, as they do for other insects what the Ichneumon, the quadruped, does for the crocodile, which lives upon the crocodile's eggs. Insects that thus live upon other insects are very numerous, and they do much to prevent a great increase of many troublesome pests. They are called parasites or parasitic insects, and, if you use your eyes properly, you will no doubt find other insects which live in this strange manner. THE DOCTOR.



AN ICHNEUMON FLY AT WORK.

## Our Puzzle-Box.

ADDITIONS AND TRANSPOSITIONS.

(In the following puzzle a letter is added to a word, which word is transposed into another word in the same sentence. Find the words. *Example:* These things must all be thoroughly aired; hang the sheets and blankets on the line. *S* is added to *these*, and transposed into *sheets*.)

1. I shall take the North River boat rather than the cars; they arrive about the same time.
2. The chief actor wore top-boots, a cocked hat, and a coat of mail.
3. It made him so nervous to have the people stare at him, that he could not get a moment's rest.
4. It made them stare more when several police officers came to arrest him.
5. She sent for some shoes, a ream of paper, a quart of ink, pearl earrings, and amber beads.

NUMERICAL ENIGMAS.

1. I am composed of 9 letters:
My 6, 7, 4, 2, is generally seen around and in front of a house.
My 6, 7, 4, holds man in subjection.
My 5, 7, 4, 2, is a young animal.
My 5, 3, 4, 6, is the generic name of certain animals.
My 1, 2, 7, 2, 9, is void.
My 8, 7, 6, 9, is vegetable.
My whole is seen in winter. PERRY A. MC.I.

2. I am composed of 19 letters:
My 10, 7, 19, 9, is an army.
My 1, 5, 16, is a pocket.
My 8, 7, 12, is a young animal.
My 16, 14, 15, 3, may be found in a crockery store.
My 18, 11, 4, 13, 2, 6, is a color.
My whole is good advice to farmers' sons.
CHARLES A. S.

TRANSPOSITION.

There are five letters, which, transposed,
Five different words will show;
Some land, a sport, a name, a fright,
And what we all must know. A. S.

CONCEALED POETS.

1. I shun the noon-day sun when I can.
2. I let Leonard rake in the middle of the day.
3. I prefer to rake at sunset.
4. I don't like the dazzling rays of the sun.
5. How that man does mar their enjoyment.
6. This pen certainly has been used.
7. Watch that little door, and see it pop open.

CROSS WORD.

My first is in surfeit but not in cloy.
My next is in rapture but not in joy.
My third is in honest but not in good.
My fourth is in timber but not in wood.
My fifth is in tumbler but not in glass.
My sixth is in pasture but not in grass.
My seventh is in barter but not in cell.
My eighth is in clapper but not in bell.
My ninth is in clover but not in hay.
My whole is in something that lasts but a day.

HALF SQUARE.

1. Part of South America. 2. To enlarge. 3. A note in music. 4. Part of a house. BOBY.

REVERSES.

(In the following history several of the words must be read exactly backwards, to make the sense complete.

Before I went to note I used to make raw no star; sometimes I would teem one in the dray, and nearly pets no him. Sometimes I prepared a part for them; sometimes took one of the snug and dial in wait for them; tub I had little drawer, and now tub little glory; I could ton get rid of them, and to this day they ram my comfort.

TRANSPOSED PROVERB.

(Readjust the following letters to form the proverb.)

One web can please worms.

DOUBLE ACROSTIC.

Some babies are called this,
Perhaps it suits your taste;
Pray handle me with care,
Lest you repent your haste.

1. Hark! Listen! What a mournful sound,
2. Refreshing to the thirsty ground,
3. A name that some one gave his son,
4. The news-boys shout it as they run,
5. Content with toys, heedless of sorrow,
Taking no thought for the "to-morrow."

A. S.

ANAGRAMS.

1. Licks bread. 2. Eva, I luff. 3. O! hot meals. 4. I drew hens. 5. Ice crones. 6. Ah! send luck. 7. Do come pin urns. 8. Sir N.'s sleigh. 9. Lost tin quivers. 10. She gains nut.

## Tricks with Strings.

Figure 1 shows an oval piece of leather in which there are two parallel cuts ending a short distance

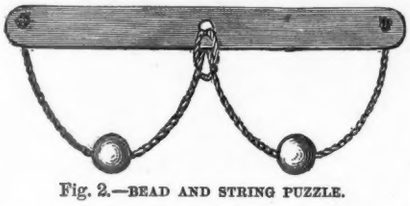
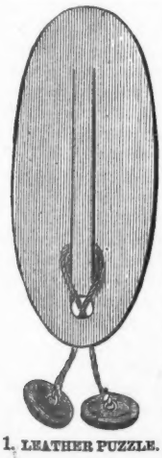


Fig. 2.—BEAD AND STRING PUZZLE.

from a round hole about the width of the space between the two cuts. A piece of string is passed through the hole and under the slit, as shown in the engraving. When the ends of the string are fastened to buttons that are larger than the hole, the puzzle is complete. The trick is to remove the string from the leather without taking off the buttons. To make the puzzle shown in figure 2, take an oblong piece of wood and bore three holes in it. A piece of twine, with two beads upon it, is then passed through the holes and looped and fastened as shown in the engraving. The trick is to get both beads upon one side without untying the end knots or removing the string from the holes. We do not now tell how these puzzles are solved, as that would spoil the fun you will find in trying. That both these tricks can be done, and easily, when you know how, we are quite well aware.



1. LEATHER PUZZLE.

## Answers to Puzzles in the November No.

NUMERICAL ENIGMAS.—1. Birds of a feather flock together. 2. Make the best of things.

CONCEALED ANIMALS.—1. Frog. 2. Bat. 3. Rat. 4. Fly. 5. Mare. 6. Bear. 7. Hare. 8. Goat. 9. Lion. 10. Stag. 11. Sable. 12. Dog.

METAGRAM. — *Stage:* Stag, sage, set, seat, tag, tea, age, gas, gate, sea, sate, sat, ate, eat, get, sag, at, as.

ANAGRAMS. — 1. Disconcerted. 2. Negative. 3. Wretchedness. 4. Postponement. 5. Unobserved. 6. Youngster. 7. Coagulates. 8. Statesmanship. 9. Naturalist. 10. Unventilated.

POSITIVES AND COMPARATIVES. — 1. Cork, calker. 2. Leave, lever. 3. Withe, wither. 4. Go, gore. 5. Mange, manger. 6. High, hire. 7. Lack, lacquer.

SCATTERED SQUARE.—
CARE
AFAR
RATS
ERST

DIAMOND.—
H
SIR
SUSIE
HISTORY
RIOTS
ERR
Y

TRANSPOSITIONS. — 1. Dearth, thread. 2. Bleat, table. 3. Lemons, melons. 4. Auction, caution. 5. Untie, unite. 6. Garden, danger, gander. 7. Debar, bread.

TRANSPOSED FLOWER GARDEN.—1. Hyacinth. 2. Candytuft. 3. Mignonette. 4. Amethyst. 5. Marigold. 6. Columbine 7. Ice-plant. 8. Sweet pea. 9. Forget-me-not. 10. Cypress vine.

DECAPITATIONS.—1. Chair, hair, air. 2. Grayling, ray, ling. 3. Sharp, harp. 4. Plover, lover.

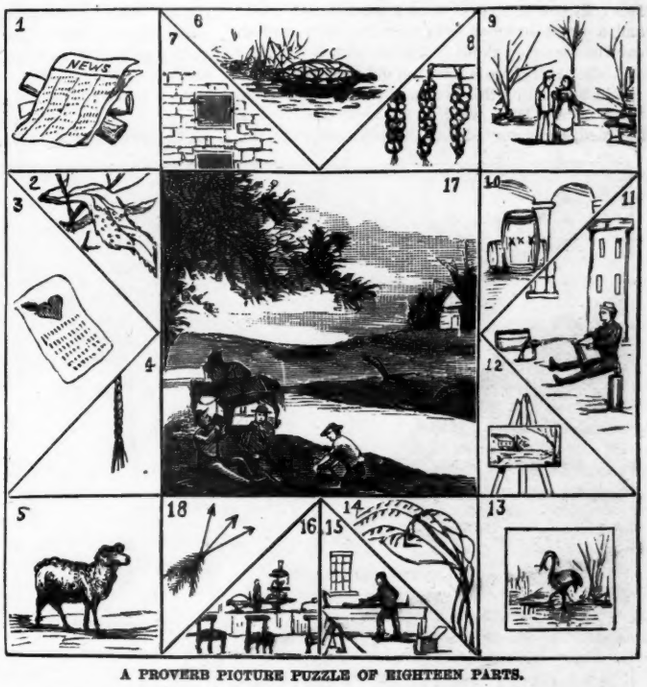
CROSS-WORD.—Greensward.

CHARADE.—Antonomasia.

ILLUSTRATED REBUS, No. 480.—The Prodigal Son has returned.

**A Wonderful Clock.**—Mr. Felix Meier, of Detroit, Mich., after nearly ten years of patient labor, has produced a clock which, not excepting that of Strasburg, is the most wonderful clock of the world. It is 18 feet high, 8 feet wide, 5 feet deep, and weighs 4,000 pounds. The framework is of black-walnut and elegantly carved. Washinton sits beneath the marble dome with a colored servant on either side guarding the doors. On the four corners of the face of the clock are four figures, emblematic of the different stages of human life: two are females, one holding an infant, the other with a child; the third is a man of middle age, while the fourth is a figure of an old gray-bearded man. All of these figures have bells, each with a tone in keeping with the age represented. The infant strikes its sweet-toned bell at the first quarter hour; the larger bell of the youth rings out at the end of the half hour, followed by the strong resonant tone of the bell of middle age at the third quarter, and the hour closing with the mournful bell of the aged man. Death, represented by a carved skeleton just above the clock face, then strikes the hour, at the same time a carved cupid pops out on either side, with wings, to indicate that time flies. This is followed by sweet music, when Washington, rising from his chair, presents the Declaration of Independence, and a door on the right is opened by the servant, and each of the Ex-Presidents, donned in the costume of his time (including President Hayes), files before the "Father of his Country," face him, and raise their hands, walk across the platform and pass out of sight, at a door which is afterwards closed by the second servant. Washington takes his seat, and all is quiet again save the heavy tick of the wonderful time-keeper. Though such a clock shows a great deal of ingenuity, it is of little practical value.

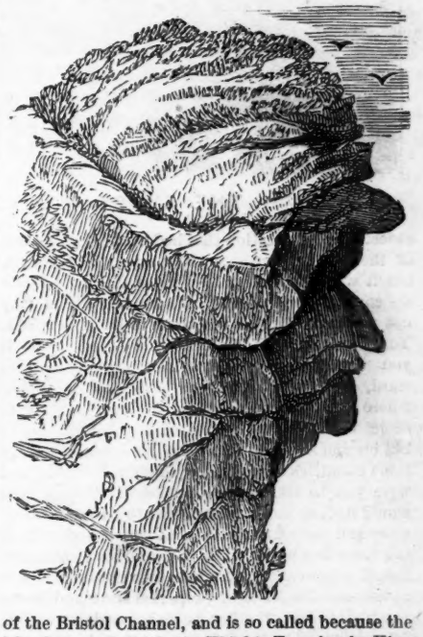
**Proverb Picture Puzzle.**—Write first a description of the picture number 1, beneath this a word descriptive of the picture number 2, and so on. If the work has been done correctly, the initials of the column read downward will spell a




A PROVERB PICTURE PUZZLE OF EIGHTEEN PARTS.

proverb. This may require some time and study, but it will be a pleasant way to spend a half hour or so on one of these long winter evenings.

**The Knight Templar Rock.**—For some time past we have given imaginary combinations of sea and land, etc., in order to bring out some animal, or face, or person, and called it a picture puzzle. The picture here presented is a real one, that is, "it is from life." The Knight Templar Rock is situated at Lundy Island, at the mouth

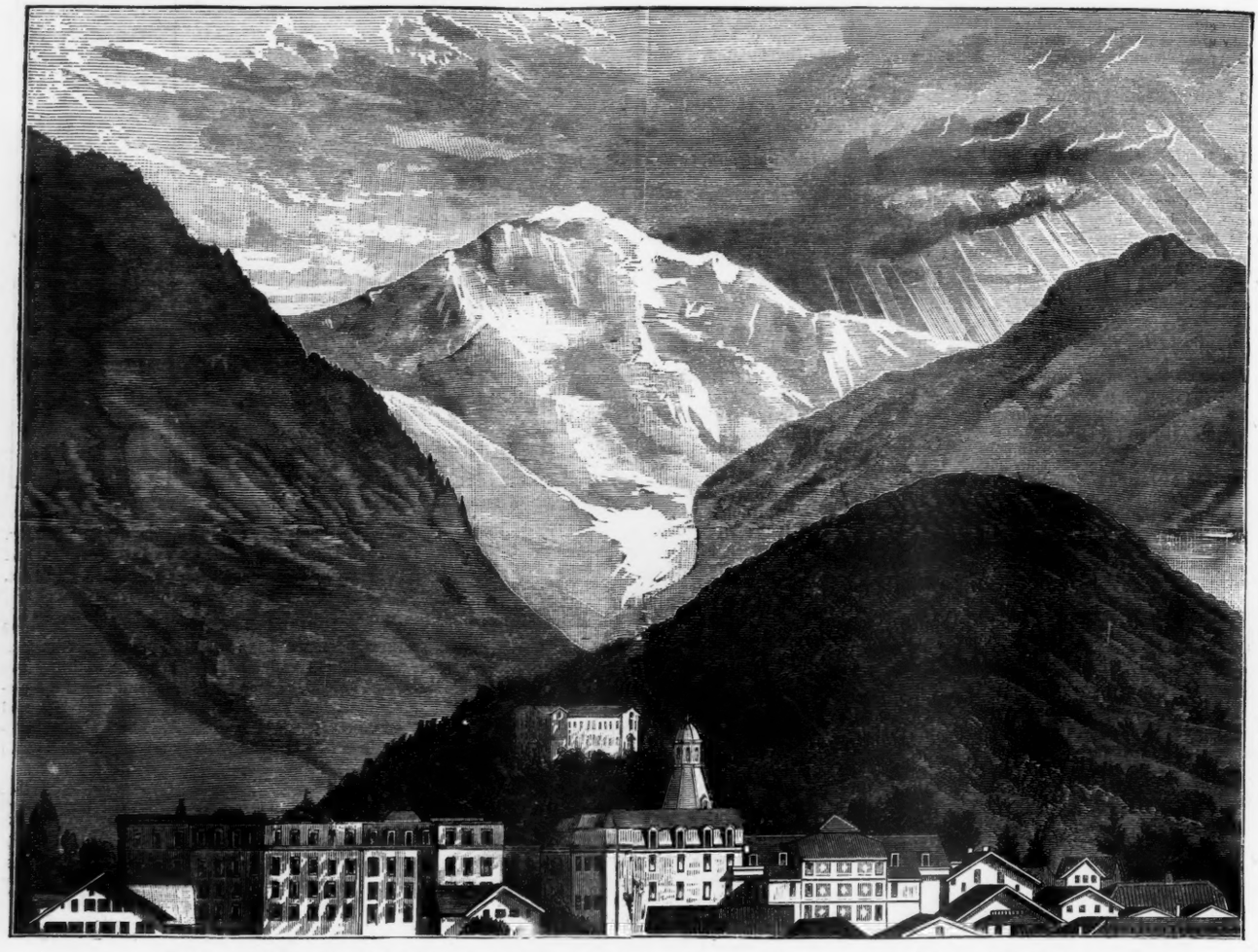


of the Bristol Channel, and is so called because the island was granted to the Knights Templar, by King John, and perhaps mainly because the rounded rock which forms the top of the head, resembles a cap which the Knights wore when they took off their helmets. There is no mistaking the rock as giving quite accurately the profile of the human face, as any one can see from the engraving.

### The Doctor's Correspondence.

This letter comes from Interlaken, in Switzerland. If you look in a large Gazetteer it will tell you that this is called Inter-laken, because it is between two lakes, the lakes being Thun and Brienz. If it tells you, moreover, that it is a town of hotels and a great summer resort for travellers, and an excellent starting point for excursions, it will have said about all there is to say about the place itself.

As I was sitting this evening upon the balcony in front of my hotel window, to enjoy the view it afforded, I was reminded of our boys and girls, and correspondent wishes to know how far north he must go to find the average climate three degrees colder. The question seems to me one that cannot be answered. You will recollect that I was sitting on the balcony upon which the window of my hotel opened. Upon the balcony were two fine large orange trees in tubs, and these trees had upon them orange flowers, green fruit, and ripe oranges, telling as plainly as trees could speak of a warm country. As I sat near to these trees, and looked outward and upward, there in front of me was the *Jungfrau*, "The Maiden," one of the most noted of all the Swiss alpine peaks, celebrated for the grand-



THE SWISS VILLAGE OF INTERLAKEN AND A VIEW OF THE JUNGFRAU.

especially of a question that had been asked by one of them—whether by a boy or a girl I forget, but it was like this: "How many feet in altitude are equal to one degree of latitude?" You may not understand it as put thus, so let me explain. Your school geographies show you that if you should start and travel directly northward, you would in time come to a region where there were no trees; still further north, there would be no plants of any kind, nothing but ice and snow, in which no plants can live. In some countries there are very high mountains, and were you to climb one of these mountains you would find, as you went up, that the trees became more and more dwarfed, and at last disappeared altogether; low herbs would be found for awhile, but, fast, if you went high enough, all vegetation would cease, and the limit of perpetual snow and ice be reached. Thus, whether we go upwards upon high mountains, or go towards the north pole, we come to a point where eternal winter reigns and no plants can grow. It has been found that the average temperature is one degree less for every 343 feet of elevation, or it is near enough to say that the climate is three degrees colder for every 1,000 feet that we ascend a mountain. I understand that my

*glow*, of which I had read but never expected to see. It was as short-lived as it was beautiful, for in a few minutes it disappeared, and left the peak looking colder than ever against the dark sky. As the glow faded, it put a crowning glory upon one of the marked days of my life, for it is a marked day when one first looks upon perpetual snow. * * The engraving, from a photograph, gives an idea, as far as a picture can, of the view from my window at Interlaken. The near hills are mostly wooded, and, seen between them, Jungfrau appears in brilliant white. These snow peaks do not appear like a great snow bank, but there are lights and shades,

eur of its outline and the purity of its everlasting snows. As I looked, how strange it seemed to smell the perfume of the orange flowers, to have at hand a tree belonging to warm southern countries, and there, but a few miles away, was a locality where ice and snow prevented the growth of even the hardiest plants, where no life, whether of animal or vegetable, could exist, where all was everlasting cold and stillness. In the orange trees and the snow peak I only saw the extremes, but in imagination I ascended the mountain, a much quicker and less fatiguing method than the actual climb of over 13,000 feet, and pictured the gradual changes; saw in rapid succession the vanishing of the "timber line," then the peculiar alpine flowers, blooming at the edge of the snow, and then the snow itself, ending all growth. There are few scenes more impressive than a view for the first time of an alpine peak like the Jungfrau. There are some things that are beyond the power of words to describe—they must be *felt*. As I looked from between the orange trees at Interlaken, the sun went down, and then the great peak seemed grander than ever. Soon its cold whiteness grew slightly ruddy, and there spread over the whole a rosy tint, as beautiful as that sometimes seen on sunset clouds. It was the *alpen-*

showing great irregularity of surface, and, as the sun plays upon them, some portions are intensely bright, while other parts are in the shadow; this adds much to their beauty and grandeur. No doubt some of you will wonder why, as the snows fall, year after year, and have been falling for ages, the uneven portions do not get filled up, and all appear as one great, rounded dome which grows larger each year. Upon these peaks, as down below, there is constant change, there are violent avalanches, and the more quiet movements that bring the snow downward until it forms a *mer de glace*—a sea of ice—or glacier. Before I leave this picture, I would mention one thing about it. You will notice a quite large building upon the side of the nearest hill. This building was in full view from my window, and I supposed that it was another hotel. The next day I drove past it, and found, to my surprise, that it was a fine large school-house. The grounds in front were neatly planted with flowers, and I could see through the windows stuffed birds and other things which showed that the school had a museum. It was a public school; wherever I have gone in Switzerland, there are fine large school-houses. It is very gratifying to see that the Swiss boys and girls are so well provided for.

## Industrial Notes.

Improvements have been made in nearly every branch of manufacture during the past few years, but in none, perhaps, to a greater extent than in that of salt. The invention of Thomas Higgin, of Cheshire, England, some four years ago, marked a new era in this industry, and it is considered that this process will work as great a revolution in the salt trade as the discovery of the Bessemer process has in that of steel. As an illustration of how quick Americans are to appreciate an improved article, the annual imports of the new process salt have increased in four years from 6,000 to 90,000 sacks.

**Marchal & Smith Organ Co.,** by sending direct from factory to purchaser, can sell their beautiful Parlor Organ, 70 inches high, 48 inches long, solid walnut case, 5 octaves, 15 stops, 4 sets of reeds, for $60. They are determined that every one shall have an opportunity to test this magnificent Organ, therefore put the price at $60, and send on fifteen days' trial, sending with every organ a Stool, Music and Instruction Book (a complete musical outfit). Order at once. Deposit the money with your bank or any responsible merchant, to be paid if organ is satisfactory. Order direct, or send for full description. MARCHAL & SMITH, 8 West Eleventh Street, New York, N. Y.

**THORBURN'S SEEDS.**

OUR GENERAL CATALOGUE OF
**VEGETABLE, FLOWER, FIELD and TREE SEEDS**
for 1881 will be ready for mailing early in the month.
**J. M. THORBURN & CO.,**
**15 John Street, New York.**

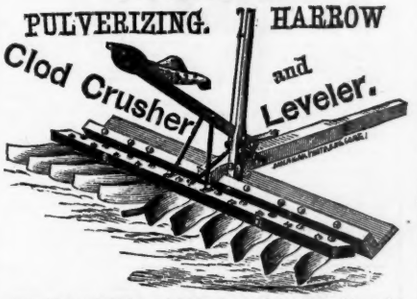
**THE FARMER'S WATCH.**
A perfect Timekeeper, Stem Winder and Stem Setter, in a solid German Silver Open Face Case, nickel plated in the best manner. A sound, strong and reliable Watch. The best ever offered for the money. Sent by express on receipt of $10. Circular free.
J. S. BIRCH & CO., 38 Dey St., New York.

**Parents Should Ask for the**
A.S.T.Co
**BLACK TIP**
In place of the metal, as it **WILL WEAR AS WELL,** and is intended to take its place
UPON **CHILDREN'S** SHOES.

**SHOPPING BY MAIL.**
**A TRUE SOURCE OF ECONOMY.**
Ladies in all towns of the United States can get the benefit of the Lowest Market Prices by buying their DRY GOODS of us. We have the largest Retail Establishment in the United States, and carry the most varied assortment of goods of every class, from all the manufacturers of repute in the world. Our system of filling orders is perfect. Every order receives the most careful and prompt attention by experienced attaches. Our sole motive is to please our customers. We neither misrepresent nor deal in worthless articles. You can
**SAVE MONEY**
By sending for our comprehensive
**CATALOGUE OF BARGAINS,**
Which is sent free to any address. Write to
**JORDAN, MARSH & CO.,**
**Washington & Avon Sts.,**
**BOSTON, MASS., U. S. A.**

**H.W.JOHNS' ASBESTOS**
**LIQUID PAINTS, ROOFING,**
Steam Pipe & Boiler Coverings, Steam Packing, Mill Board, Sheathing, Fire Proof Coatings, &c.
SEND FOR DESCRIPTIVE PRICE LIST.
H. W. JOHNS M'F'G CO. 87 MAIDEN LANE, N. Y.

**ACME**
**PULVERIZING HARROW and Clod Crusher Leveler.**



The **"ACME"** subjects the soil to the action of a **Crusher** and **Leveler,** and at the same time to the **Cutting, Lifting, Turning** process of double rows of
**Steel Coulters,**
the peculiar shape and arrangement of which gives **immense cutting power.** The **entire absence of Spikes** or **Spring Teeth** avoids pulling up and scattering of rubbish. It is **especially adapted** to inverted sod, hard clay and "slough land," where other Harrows utterly fail, and also works perfectly on light soil. Send for circular.
**NASH & BROTHER,** HARRISBURG, Penn. **Sole Manufacturers,** and 22 COLLEGE PLACE, NEW YORK CITY.

**RED FOX, SKUNK, MUSKRAT,** etc., etc.—Highest cash prices paid. Send for full circular.
E. C. BOUGHTON, 33 Howard Street, N. Y.

**FREE**
We will send **25 Useful Household Articles,** as Samples, and our Catalogue, on receipt of a 3c. stamp to pay postage and packing, to all who mention this paper.
**London Manufacturing Co.,**
**22, 24 & 26 4th Av., N. Y. City.**

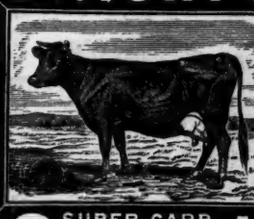
**10** NICE CONCORD GRAPE VINES by Mail for $1.00. **Don't Delay in Ordering** for Spring Planting. Let me book your **Order now.**
**WM. B. REED, Chambersburg Nurseries,** Chambersburg, Pa.

**THE BEST**

**J. ESTEY & Co.**
**BRATTLEBORO VT.**
Send postal for free Illustrated Catalogue.

**ENSILAGE.**
Latest facts—How to build and fill Silos. 72 Pages Illustrated, with Goffart's Treatise. Mailed for 10 Green Stamps.
Ensilage Cutters for Hand or Power, Dry or Green Fodder.
**THE NEW YORK PLOW CO., 55 BEEKMAN ST., NEW YORK.**

**DWIGHT'S**



**SUPER-CARB. SODA.**

VERBENA.

**SEND 30 CTS.** for Package of Verbena, Blotched and Striped Petunia, Double Pink and Sugar Trough Gourd. I will also send, **free,** an illustrated circular of my **SELF-SUPPORTING TRUSS FENCE.** The Seeds are **the very choicest,** and I could not make this offer if I had not grown them. The cut shows the Flower and some of the uses of the Gourd. They hold from three to five gallons each, and I exhibited one at MR. JUDD'S Office **that held over eleven gallons.** MY SEED CATALOGUE (sent free) TELLS HOW TO GROW THEM. **THE FENCE** IS OF MY OWN INVENTION, **Costs 30 Cents per Yard Less than Board,** STANDS PERFECTLY, **IS PORTABLE, and is NOT PATENTED.**

ILLUSTRATED CIRCULAR TELLS JUST HOW TO MAKE IT, AND IS WORTH $5.00 TO ANY FARMER.
**MY VERBENAS EMBRACE OVER 100 SHADES OF COLOR.**
The Seeds alone cannot be bought for less than 40 cents of any Seedsman. One and-three cent stamps taken. Address,
**WALDO F. BROWN, Oxford, Ohio.**

**CORTLAND WAGON CO.**
**Manufacturers of**
PLATFORM
**SPRING WAGONS,**
END SPRING, SIDE SPRING, AND SIDE BAR
**OPEN and TOP BUGGIES,**
**Phaetons,**
**ROAD WAGONS,**
**Etc. Etc.**

Having recently enlarged our Works, we are prepared to and will furnish a better wagon for the money than any other concern in the United States. All our work is fully warranted. No shoddy or poor work is allowed to leave our shops. Catalogues furnished on application.
Agents wanted everywhere.
BRANCH HOUSE:
**263 Wabash Ave., CHICAGO, Ill.**
**Cortland Wagon Co., Cortland, N. Y.**

**IF YOU want a large, live, 16-page, illustrated, religious, family, temperance paper, free** from sectarianism, politics, controversy, pious novels, continued stories, advertisements, puffs, pills, and whisky bitters; opposing rum, tobacco, infidelity, and the devil; containing pictures, *true* stories, incidents, providences, answers to prayer, poetry, music, temperance, religion, and common sense; fine paper, large type, and good reading for young and old; send **$1** for **THE CHRISTIAN and 25 cts. for the LITTLE CHRISTIAN** a year. Both papers sent 3 months for **10 cts.** Size 33 by 46 inches, containing 4 papers in one, The Christian, Armory, Safeguard, and Common People. Specimens free. **Splendid premium list.** Organs and hundreds of other premiums given to canvassers. **Agents wanted everywhere. Mr. Spurgeon said,** "*The Christian is the best paper that comes to me.*" **D. L. Moody said:** "*About the best paper in the country.*" **George Muller said:** "*I like The Christian for its uniform soundness.*" Address **H. L. HASTINGS, Publisher, 47 Cornhill, Boston, Mass.**

BLISS' AMERICAN WONDER PEA.

**Extra Early, Requires No Bushing. Exquisite Flavor.**

**The best variety for forcing, and the best for early sowing in the garden,**

☞ *On account of its exceedingly Dwarf habit, it can be grown in Hot Beds like Cucumber, and Lettuce.*

Circulars giving a full description mailed to all applicants.

**CAUTION.**—As there is another Pea in the market called "American Wonder," be sure and call for "BLISS' AMERICAN WONDER," and notice facsimile of the signature of our firm upon each packet.

PRICES.—One-fourth pint package, 20 cents; pint 65 cents; quart, $1.25; by mail, post-paid. When delivered at our store, or sent by express at the expense of the purchaser: One pint, 55 cents; one quart $1.00.

**B. K. BLISS & SONS, 34 Barclay St., N. Y.**

ESTABLISHED 1845.

**300 BEAUTIFUL ILLUSTRATIONS.**

Our new edition will be ready early in January, and mailed to all applicants, enclosing 10c.

Address **B. K. BLISS & SONS**, P. O. Box 4,129, N. Y.

**DREER'S GARDEN CALENDAR**

**FOR 1881.** Beautifully illustrated; ready January 15th; mailed free. It contains descriptive price lists of **VEGETABLE AND FLOWER SEEDS**, and **EVERYTHING FOR THE GARDEN.** Livingston's Perfection Tomato Teosinte, and other tested first-class **NOVELTIES** will be offered.

**HENRY A. DREER,**
**714 Chestnut St., PHILADELPHIA, PA.**

STRAW RASP BLACK GOOSE **BERRIES**

GRAPES & CURRANTS,

A superior stock of **PLANTS** of all the *good old and choice new* kinds.

The largest collection of Strawberries in the U. S. Head-quarters for the **Cuthbert Raspberry. 5 New White Grapes.** Illustrated catalogue, giving cultural notes, *honest* descriptions and *fair prices*, FREE.

**J. T. LOVETT, Little Silver,** Monmouth Co. **N. J.**

**Success with Small Fruits.**

Winter is the time to secure it. **E. P. ROE'S** New Book **"Success with Small Fruits"** has been unanimously and heartily endorsed by the best horticultural authorities in the country. I furnish it with very liberal offers of plants at its regular retail price. It makes the most beautiful illustrated gift book of the season. Those succeed who learn how. Catalogue free. Address

**E. P. ROE, Cornwall-on-Hudson, N. Y.**

**SEEDS.** **Cabbage Seed a Specialty.**

Wholesale Price Lists—for dealers only—mailed free.

FRANCIS BRILL, Seed Grower, Mattituck, Long Island, N. Y.

**SEEDS!** **BURPEE'S** are warranted first-class in every respect, and in order to introduce them to thousands of new customers, we have prepared a **SPECIAL TRIAL BOX OF SEEDS FOR 1881.** This box contains *Winningstadt Cabbage, New Alpha Tomato* (this alone sold for 25c. last Spring), *Dewing's Improved Turnip Beet, Norfolk Savoy Spinach* (surpasses all others), *Prolific Nutmeg Melon* (very fine), *Extra Early Scarlet Turnip Radish, New Maltese Parsnip* (beautiful), and *Butman Squash.* All the above, in a neat box, with full instructions for growing, mailed to any address for **ONLY 25c.** We have 407 varieties of the choicest **Flower Seeds,** including *novelties,* **all at 5c. per packet. 24 packets for $1, postpaid,** *purchaser's selection.* Or we will send **10 packets** (our choice) **for 25c. 5 of our 25c. collections** (Flowers or Vegetables) **mailed for $1.** ☞ *Postage stamps accepted as cash.* Please **order now,** and ask for **BURPEE'S FARM ANNUAL FOR 1881.** Enlarged and beautifully illustrated. Tells about all the best Garden, Field, and Flower Seeds (including *important novelties of special merit*), Bulbs, Plants, Fruits, Thoroughbred Live-Stock, Fancy Poultry, Dogs, etc., and **is sent free to all.** Send your own and your neighbor's address, plainly written, to **W. ATLEE BURPEE & CO.**
**Seed Warehouse, 219 and 221 Church St., Philadelphia, Pa.**

**SEEDS,**
**BULBS, PLANTS.**

BEAUTIFUL ILLUSTRATED CATALOGUE FREE. My list of new, rare and beautiful flowers is the best in the country. New Gladiolus, Tuberoses, Amaryllis, Roses, Carnations, choice Flower and Vegetable Seeds, Seeds of House plants, &c. The greatest collection of Lilies, 100 rare kinds. All seeds except Greenhouse, are sold in FIVE CENT PAPERS; the best system ever adopted. Everything warranted true to name. See Catalogue; prices are low.

The following sent by mail postpaid. 10 Gladiolus, 10 sorts named, 50c, 9 Lilies, 9 sorts named, $1. 12 double Tuberoses, 75c. All fine sorts and flowering Bulbs. Remit currency or postage stamps. My goods have an established reputation and go to all parts of the world.

**J. LEWIS CHILDS, QUEENS, N.Y.**

**74,000** **QUARTS OF BERRIES,** grown and marketed in season of 1880. I plant and sell from the same Genuine Stock.

I offer over
**150** SORTS OF PLANTS, VINES, TREES, &c., AT LOWEST CASH RATES.

New Descriptive Catalogue for spring of 1881. Now ready, free. Send for one. Address,

**J. S. COLLINS, Moorestown, N. J.**

**SEEDS**

**Vegetable, Farm and Flower Seeds,**

**FERTILIZERS & GARDEN REQUISITES,**

At Retail and Wholesale, sent to any part of the United States.

Catalogues mailed FREE to any address.

**WM. H. CARSON,**
**125 Chambers Street, New York.**

**Shakers' Garden Seeds.**

TRUE and GENUINE. FRESH and RELIABLE.

One of the oldest Seed firms in the country. Seeds sent by mail, postage free. Special prices and terms to GRANGERS. "The excellence of the Shakers' Garden Seeds is generally admitted.—*Eds. American Agriculturist.*

Illustrated and Descriptive Catalogue of Vegetable and Flower Seeds **Free.**

Address, **WM. ANDERSON,**
**Successor to** CHARLES SIZER,
**Mount Lebanon, Col. Co.,** N. Y.

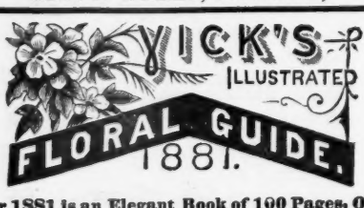
**STRAWBERRIES**

AND OTHER SMALL FRUIT PLANTS,

**VINES, SHRUBS, & ROSES,**

PREPAID BY MAIL. Catalogue free. Send for it now. STRAWBERRY CULTURE FOR A PENNY STAMP.

**GEO. S. WALES, Rochester, N. Y.**




**For 1881 is an Elegant Book of 100 Pages, One Colored Flower Plate, and 600 Illustrations,** with Descriptions of the best Flowers and Vegetables, and Directions for growing. Sent free, by mail, for 10 cents. In English or German.

**VICK'S SEEDS** are the best in the world. The FLORAL GUIDE will tell how to get and grow them.

The **Flower and Vegetable Garden,** 175 Pages, Six Colored Plates, and many hundred Engravings. For 50 cents in paper covers; $1.00 in elegant cloth. In German or English.

**Vick's Illustrated Monthly Magazine**—32 Pages, a Colored Plate in every number and many fine Engravings. Price, $1.25 a year; Five Copies for $5.00. Specimen Numbers sent for 10 cents; 3 trial copies for 25 cents.

Address, JAMES VICK, Rochester, N. Y.

**Peter Henderson & Co's New Catalogue of SEEDS AND PLANTS**

Will be mailed free to all who apply by letter.

**Our Experimental Gardens in which we test our Vegetable and Flower Seeds are most complete; and our Greenhouses for Plants (covering 3 acres in glass), are the largest in America.**

*Peter Henderson & Co*
35 CORTLANDT ST. NEW-YORK.

**JOHN SAUL'S**
CATALOGUE OF
**NEW, RARE, and BEAUTIFUL PLANTS**

**Will be ready February 1st,** with a Colored Plate. It is full in really Good and Beautiful Plants. Nepenthes, New Dracænas, New Crotons, New Pelargoniums, New Roses, Geraniums, Fuchsias, etc., with a rich collection of Fine Foliage and other **Greenhouse and Hot-House Plants,** well grown and at Low Prices. **Free to all my Customers;** to others, 10 cts.; or a plain copy free.

Catalogues SEEDS, ROSES, ORCHIDS, FRUITS, etc., free.

**JOHN SAUL, Washington, D. C.**

**Our Illustrated SEED CATALOGUE FREE.**
**A. D. COWAN & Co.**
**114 Chambers St. NEW YORK.**

**MOORE'S EARLY**

NEW $60 PRIZE GRAPE. Very hardy, very early, and fine quality. Never mildews. The best Early Black Grape yet introduced. **Winner of a first-class Certificate of Merit;** the $60 Prize for the Best New Seedling; 30 First Prizes; 2 Silver Medals.

Also, **Moore's New Cross-Bred Asparagus,** the largest grown. Send for circular.

**JOHN B. MOORE, Concord, Mass.**

**TREES AND PLANTS,**

By Mail, Post-paid.

| | |
|---|---|
| 100 Sugar Maples, for | 50cts. |
| 100 Yellow Birch | 50 " |
| 100 Hemlock Spruce | 75 " |
| 100 American Arbor Vitæ | 75 " |
| 100 Wisconsin Weeping Willow Cuttings | $1 00 |
| 100 Strawberry Plants (10 best sorts, 10 of a kind), | 2 00 |
| 100 Giant Asparagus | 1 00 |

or all the above mailed free for $5.

**W. W. JOHNSON,** Snowflake, Mich.

A GREENHOUSE AT YOUR DOOR
**BEAUTIFUL FLOWERS**

*We will send postpaid, guaranteeing safe arrival in good condition,* our *choice of sorts:*

**60 $1 SETS;** For example: 12 Roses, $1; 20 Verbenas, $1; 15 Basket or Bedding Plants, $1; 10 Geraniums, $1; 10 Tuberoses, $1; 6 Hardy Flowering Shrubs, $1; and *Hundreds* of others, **NEW AND RARE CHEAP,** and *many* **NOVELTIES.**

For your choice of varieties, see our **72-page Catalogue,** with colored plate, free to all. We offer an *immense stock* of **SMALL FRUITS** Grape-Vines, Fruit and Ornamental Trees, Evergreens, etc.: 8 Currants, $1; 25 Raspberries, $1; 75 Strawberries, $1; 8 Grapes, $1; 8 Apple, $1; 4 Pear, $1; 8 Peach, $1; 40 Sweet Chestnut, $1; 100 Hardy Catalpa, $1; etc. Catalogue (with 11 col'd strawberries) free.

27th *Year.* 18 *Greenhouses.* 400 *Acres.*

**STORRS, HARRISON & CO.,** Painesville, O.

**SEEDS! BULBS!** **Quality the Highest, Prices the Lowest!** New and liberal club terms. Splendid flower seeds, fresh, prize strains, fine novelties. Gladiolus, Dahlias, etc. Fine bulbs, best varieties, true to name. New catalogue free; send for it.

**E. WYMAN, Jr., Rockford, Ills.**

**TREES FOR SALE.**

**Peach Trees,** a heavy stock of fine quality: **Apple Trees,** largely of Smith's Cider, Doolittle **Raspberry,** Wilson's Early **Blackberry,** from Root Cuttings: **Osage Orange,** SHADE and ORNAMENTAL TREES, and all other Nursery Products at lowest rates.

**DAVID BAIRD,** Manalapan, N. J.

**For 1881** | **100,000 No. 1 PEACH TREES.** All kinds fruit and ornamental Trees, Vines, and Plants. Sharpless, Glendale, Mt. Vernon and 100 other choice kinds small Fruits and Osage Orange. Send for my low Price List. Address, J. PERKINS, Moorestown, N. J. | **Est'd 1838**

**30 Acres BERRIES** **BIG** **100** best sorts **Plants,** Currants, Grapes, Trees, Asparagus, etc. See our Catalogue before buying, sent free.

G. H. & J. H. HALE, South Glastonbury, Ct.

**SEEDS** Our large illustrated Seed Catalogue of everything for the Farm or Garden **MAILED FREE TO ALL.** It costs nothing and may save you a great deal. **Send for it at once.** **BENSON, MAULE & CO., 223 Church St., Phila., Pa.**

**INCREASE** the yield; **SAVE** time and money, by using

**THE PHILADELPHIA Broadcast Seed Sower,**

**For Sowing all Grain and Grass Seeds, also Fertilizers.** No. 1, price $30, sows 12 to 15 acres per hour. No. 2, (see cut,) price $6, from 4 to 6 acres, at the same time sowing *better and far more evenly than by hand or any other method.* Send for circular and testimonials. **Agents Wanted.** **Benson, Maule & Co., Mfrs. 223 Church St., Phila, Pa..**

## Asparagus---New Variety.

Smalley's Extra Early Defiance; 2 weeks earlier than Colossal, a larger, softer grass; far superior to all other varieties. One acre will produce more grass with the same treatment than 2 acres of Colossal. It is the best Asparagus grown, either for private use or for market. Two-year-old plants, $5 per 100, $30 per 1,000; seed, $12 per lb. Address, **A. SMALLEY, Bound Brook,** Box 99, N. J.

Will be mailed FREE to all applicants, and to customers without ordering it. It contains five colored plates, 600 engravings, about 200 pages, and full descriptions, prices and directions for planting 1500 varieties of Vegetable and Flower Seeds, Plants, Roses, etc. Invaluable to all. Send for it. Address, **D. M. FERRY & CO., Detroit, Mich.**

**CHOICE LOT OF PEACH, APPLE and other** Fruit Trees and Plants at *bottom prices.* Prices free. *Mention paper.* Address R. S. JOHNSTON, Stockley, Del.

## THE DINGEE & CONARD CO'S
**BEAUTIFUL EVER-BLOOMING**

# ROSES

We deliver **STRONG POT ROSES** for Winter Bloom and Fall Planting, *safely by mail,* at all post-offices. Five Splendid Varieties, *your choice,* all labeled, for **$1; 13** for **$2; 19** for **$3; 26** for **$4; 35** for **$5; 75** for **$10; 100** for **$13.** Send for our **New Guide to Rose Culture,** and *choose from over* **500 Finest Sorts.** Our **Great Specialty** is growing and distributing Roses. **THE DINGEE & CONARD CO.,** Rose-Growers, WEST GROVE, CHESTER CO., PA.

**CHAMPION QUINCE** and the **NEW** The two most valuable fruits of recent introduction. Form a club in your neighborhood. TERMS LIBERAL. Address for circ'lr **F. L. PERRY,** Canandaigua, N.Y.

Keeps until Feb.

**VERGENNES** Keeps until Apr.

# THOUSANDS

**ROSES AND GERANIUMS** now ready. Samples by mail, 14 for $1.10. Sorts and sizes splendid. Lists free. **TYRA MONTGOMERY, Mattoon, Ill.**

**WANTED.—Men to Sell Nursery Stock;** good salary and expenses paid; no experience necessary. CHASE BROS., Rochester, N. Y.

## PEARCE'S IMPROVED
**Cahoon Broadcast Seed Sower,**

**For Sowing all kinds of Grain and Grass Seed.**

**Does as much work as 5 men can do by hand, and BETTER work than can be done by any other means whatever. Agents wanted in every county in the United States. Price $5. Send stamp for circular.**

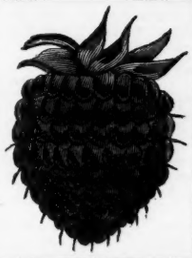
**GOODELL COMPANY, Antrim, N. H.,** SOLE MANUFACTURERS.

**FOR SALE**—Twenty-four thousand Peach Trees; budded with Delaware buds. R. H. CLARKE, Morristown, N. J., or Equitable Building, New York.

**For 1881.**

Send stamp for **R. H. ALLEN & CO.'S Seed Catalogue.** Address, **P. O. Box 376, N. Y. City.**

**FOR SALE, STANDARD PEAR,** large stock, 2 to 5 year; 2 to 8 feet; $10 to $25 per 100; and other stock. Catalogue Free. **HARVEY CURTIS, Owego Nursery, Tioga Co., N. Y.**



## BERRIES.

The largest and best; Flowers, Tuberose bulbs; Roses by mail. **Early Welsh Raspberry.** 2,000,000 Sharpless, Mt. Vernon, Kirkwood, and other Strawberries. **Rieffer's Hybrid, Blight-Proof Pear.** "40 Years' Experience in Pear Growing, telling how to avoid the Blight." "40 Years' Among Small Fruits, telling What and How to Plant." Either sent by mail for 15 cts.; both for 25 cts. Catalogues of Fruits and Flowers free. **WM. PARRY, Parry P. O., N. J.**

**20 CUTHBERT** or Gregg Raspberries by mail, post-paid, for **$1.** SMALL FRUITS, GRAPE VINES, etc., Norway Spruce for Hedges. Evergreens and Shade Trees. Price List free. **Blauvelt & Co., ville,** N. Y.

**ROSES.—12 CHOICE VARIETIES BY MAIL** for **$1.00.** NOW IS THE TIME TO HAVE YOUR ORDER FILED FOR EARLY SPRING SHIPMENT. Satisfaction guaranteed. **WM. B. REED, Chambersburg, Pa.**

**My Annual Catalogue of Vegetable and Flower Seed for 1881** will be ready by January, and sent free to all who apply. Customers of last season need not write for it. I offer one of the largest collections of vegetable seed ever sent out by any seed-house in America, a large portion of which were grown on my six seed farms. **Printed Directions for cultivation on every parcel.** All seed sold from my establishment **warranted to be both fresh and true to name;** so far that should it prove otherwise, I will refill the order gratis. As the original introducer of the Hubbard and Marblehead Squashes, the Marblehead Cabbages, and a score of other new vegetables, **I invite the patronage of all who are anxious to have their seed fresh, true, and of the very best strain. NEW VEGETABLES A SPECIALTY.**

**JAMES J. H. GREGORY,** Marblehead, Mass.

**CRANBERRY PLANTS.**—The best New and Early Varieties and prolific bearers. Circulars relating to culture, soil, price, etc., free. F. TROWBRIDGE, Milford, Ct.

**APPLE TREES.**
**MAIDEN HAIR TREES.**
*(Salisburia Adiantifolia.)*
And all other stock at the very lowest prices, in order to clear the ground.
**RUMSON NURSERIES,**
B. B. HANCE, Agent. **Red Bank, N. J.**

**FOWLER'S**
**HAY ELEVATOR AND CARRIER**
Is the best in use. No climbing to make changes. Send for circular and terms to agents.
GEO. H. FOWLER, Taughannock Falls, Tompkins Co., N.Y.

## MATTHEWS' SEED DRILL
**The Standard of America.**

Admitted by leading Seedsmen and Market Gardeners everywhere to be the most perfect and reliable drill in use. Send for circular. Manufactured only by **EVERETT & SMALL, Boston, Mass.**

## A GREAT BARGAIN

**MAMMOTH CABBAGE,** largest variety in the world, **20** to **50 lb** each. Solid heads. Sweet and tender. Package **25c.; oz. 40c.** **SANGUINEUS,** a magnificent tropical-looking plant ten feet high, covered with bright red fruit. Package **25c.** **GIANT CORN,** thirteen feet high, **160** bushels per acre. Package **25c.** **CHILI SQUASH,** grows to an enormous size, **75** to **300 lb.** Package **25c.** **SNAKE CUCUMBER,** two to six feet in length. Coils up like a snake. Package **25c.** **CHOICE GARDEN SEEDS, 10c.** per package. Asparagus (*Conover's Colossal*), Carrot (*Long Orange*), Cress (*Curled*), Cucumber (*Green Cluster*), Lettuce (*Silesia*), Musk Melon (*Nutmeg*), Watermelon (*Mt. Sweet*), Parsnip (*Long White*), Radish (*Scarlet*), Spinach (*Round Leaved*), Tomato (*Trophy*), Turnip (*White Dutch*). **SELECT FLOWER SEEDS, 10c.** per package. Fragrant Candytuft, Lupinus, Gilia, Acroclinium, Japonica, Mignonette, Double Zinnia, and Marigold.

**A SPLENDID OFFER!**

I will send the above *Superb Collection of Seeds* (25 packages, price $3.25) and the *Practical Farm Journal,* a neat eight-page paper, devoted to farming, gardening, poultry, fruit, etc., for one year, all postpaid for only **$1;** club of four, **$3. Agents wanted.** Sample copy, **3c.** Remit by Registered Letter, or P. O. Order on Lyons, N. Y. *Mention this paper.* Address at once, **FRANK FINCH, Clyde, Wayne Co., N. Y.**

"All who favor him with their orders will be honestly and fairly dealt with."—*E. B. Wells, P. M., Clyde, N. Y.*

**ARE GROWN BY ACRES AT QUEENS.**

We offer a NEW HYBRID for the first time. Also **31** NEW VARIETIES. We are in the front ranks with **New Geraniums** and many other Plants. Send for catalogue, free. V. H. HALLOCK, SON & THORPE, Queens, N. Y.

## FOREST TREES.

**HARDY CATALPA,**
**AILANTHUS,**
**EUROPEAN LARCH,**
**WHITE ASH,**
**AND EVERGREEN TREES AND SEEDS.**
**VERY LARGE STOCK,**
**ALL NURSERY GROWN,**
**FOREST TREES BY MAIL,**
**SEND FOR CATALOGUE,**
**R. DOUGLAS & SONS,**
Waukegan, Ill.

**ONE MILLION of No. 1 PEACH and APPLE TREES.** 200,000 of the celebrated June Budded Peach Trees, with full line of one year old Trees. Among which can be found kinds suited to all sections, including all the new and old standard sorts. Apple Trees, 200,000 of extra long-keeping varieties, adapted to Southern planting or wherever long-keeping apples are desirable. Grapes, Raspberry and Strawberry, in large or small lots. I also offer a full line of all kinds of Nursery stock at prices to suit the times. Apple and Peach Trees sent by mail to all sections. Catalogues, showing how and what to plant, with much valuable information mailed *gratis* to all applicants. **RANDOLPH PETERS, Great Northern and Southern Nursery, Wilmington, Del.**

**KIEFFER AND LECONTE PEARS, Blight Proof,** Strawberries, Raspberries, Grapes; large stock of Wilson Blackberries. Fruit Trees, etc. Price List sent free. **S. C. DE COU, Moorestown, Burlington Co., N. J.**

**MY CATALOGUE**
**OF SEEDS and SEED POTATOES**
Will be ready in January, and sent free to all. MY SEEDS ARE EQUAL TO THE BEST, AND MY SEED POTATOES CANNOT BE EQUALED ELSEWHERE. 27¾ Bushels was the product from 1 lb. of Seed. Don't fail to send your address. It will pay you. **J. A. EVERITT,** Watsontown, Pa.

Whose Are The Best?

# SEEDS LANDRETHS'

**To all who have occasion to purchase Seeds:**

It is manifest that from **Good Seeds only** can good Vegetables be obtained; yet we see those who exhibit sound sense in most affairs of life, heedlessly purchase seeds of doubtful quality and character. The superior character of LANDRETHS' has been substantiated beyond all question. We therefore invite all who are not already purchasers of Landreths' Seeds to give them a trial. Those remote from Druggists, Grocers and others selling our Seeds, can be supplied by us direct at reasonable prices. Ask your Storekeeper for **Landreths' Seeds in original sealed Packages,** or drop a Postal Card for prices and catalogue to **DAVID LANDRETH & SONS, Philadelphia, Pa.**

## THE CHAMPION
## REAPERS & MOWERS.

**AWARDED THE HIGHEST HONORS**

everywhere, by the best expert Authority, after the most thorough tests as to its capacity and execution.

**Manufactured by Whiteley, Fassler & Kelly, The Champion Machine Company, and Warder, Mitchell & Co., Springfield, O.; and The Toronto Reaper & Mower Company, Toronto, Canada.**

---

## THE SUGAR MAKER'S FRIEND.
**Over 3,500,000 in Use.**

Post's Patent Bucket & Cover Attached.

More Sugar and better quality from Eureka Sap Spouts than from any others is the verdict of all users.

Call for them at your Hardware Stores. *Responsible Agents Wanted.* Samples, circulars, and terms sent, post-paid, on receipt of 20 cents. Address

**C. C. POST, Patentee, Burlington, Vt.**

---

## Big Giant Corn Mill,
### Every Man His Own Miller.

The only Mill that will grind Corn with Shuck on without extra expense. The only Mill grinding Corn and Cob successfully, that will grind Shelled Corn fine enough for family use.

Grinds twice as fast as any other Mill of same size and price.

MANUFACTURED BY

**J. A. FIELD & CO., St. Louis, Mo., U. S. A.**

---

THE

## 'RIGHT SPEEDY'
## CORN SHELLER.

Is the best Hand Sheller made; does the best work and works the best. Is warranted five years. **AGENTS WANTED.** **Sample** sent on receipt of **$5.00.** Address,

**CURTIS GODDARD,**
ALLIANCE, OHIO, U. S. A.

---

## Monarch and Young America
## CORN & COB MILLS.

Only Mills made with **Cast Cast-steel Grinders.** Warranted superior to any in use for all purposes. Will grind faster, run easier, and wear longer. Satisfaction guaranteed.

Also Corn Shellers, Feed Cutters, Cider Mills. Send for circulars and prices.

Manufactured by
WHITMAN AGRICULT'L CO.
ST. LOUIS, MO.

---

GET THE BEST FARM

## GRIST MILL.

The grinding parts are **steel.** *They take less power,* are more durable, simple, and cheap. *Send for descriptive catalogue.*

**W. L. BOYER & BRO.,**
**Philadelphia, Pa.**

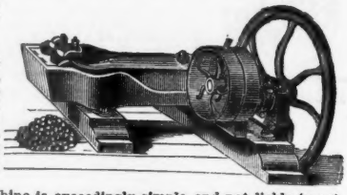
**Also Manufrs. of Celebrated *Union Horse Power, etc.***

---

## CHEAPEST AND BEST FERTILIZER.--FOLLOW NATURE.

WHICH USES **GROUND** LIMESTONE IN MAKING THE SOIL.

Every Farmer can prepare his own **Fertilizer** with an **ordinary Horse Power,** by using



## FORSTER'S COMBINED CRUSHER & PULVERIZER.

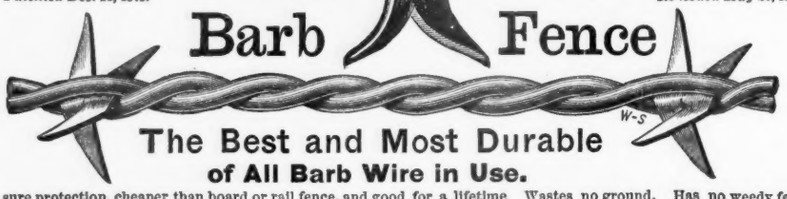
Crushes and grinds Limestone at one operation. Ground Raw Limestone has been used as a Fertilizer in Germany for 50 years, and found to be three times as valuable as **Burnt Lime.** With above Machine, it does not cost as much as Burnt Lime.—W. W. REED, of Erie, Pa., says: "The **Ground Limestone** proved to be the most economical Fertilizer, showing a profit over Bone Dust of $1.96 per Acre, over Phosphate of $4.28 per Acre; over Guano of $9.70 per Acre; and over Salt of $5.90 per Acre."—JOHN G. BEAR, Montgomery, Lycoming Co., Pa., says: "I believe it to be the **cheapest** and **best** Fertilizer in this country."

ESPECIALLY VALUABLE FOR SPRING CROPS, CORN, ETC. Machine is exceedingly simple, and not liable to get out of order. Address, **TOTTEN & CO., Pittsburgh, Pa.** ☞**ONLY MAKERS.**

---

## FRENTRESS.
## Steel Barb Wire Fence

*Patented Dec. 14, 1875.* *Re-issued May 22, 1877.*



### The Best and Most Durable of All Barb Wire in Use.

A sure protection, cheaper than board or rail fence, and good for a lifetime. Wastes no ground. Has no weedy fence row. When the best costs no more than an inferior article, always look for the **best.** We claim for the **Frentress a Superiority over all other Wires.** For Circulars and Price Lists address

**ST. LOUIS WIRE FENCE CO.,**
**814 & 816 N. 2d St., St. Louis, Mo.**

**FRENTRESS BARB WIRE FENCE CO.,**
**East Dubuque, Ill.**

---

CENTENNIAL AND GRAND PARIS WORLDS FAIR PRIZES AND ALL THE U.S. STATE FAIR PREMIUMS IN 1877 & 1878.
PRICE, $350.
PUTS FROM 10 TO 12 TONS IN A CAR.
PRICE, $200.
REQUIRES LESS HELP.
PRICE, $175.
AND BALES TWICE AS FAST AS ANY OTHER PRESS.
THE BALE IS PATENTED AND WILL SELL FOR MORE MONEY.
ADDRESS FOR CIRCULAR
P. K. DEDERICK & CO. ALBANY, N.Y.

## Farm Grist Mills
### And Corn Shellers.

OVER 25,000 NOW IN USE.

**Every Machine is fully Warranted.** Price of Mills, $15 to $35. Shellers, $5. Don't buy a **Mill** or **Sheller** until you have seen our terms and Illustrated Circular. Address

**LIVINGSTON & CO.,** Iron Founders, Pittsburgh, Pa.

---

## MILL MANUFACTORY

ESTABLISHED 1851.

### Grist Mills of French Buhr Stone.

Portable Mills for Farmers, Saw Mills, etc. **18 Sizes and Styles. Over 2,000 in use.** $80 and upwards. Complete Mill and Sheller $95. A boy can grind and keep in order. Adapted to any kind of suitable power. Complete Flouring and Corn Mill. **ALL SIZES.** Send for Circular No. 28. **NORDYKE & MARMON CO., Indianapolis, Ind.**

---

**Lion Feed Cutter,** combining the latest best improvements. Also

**Gale's Feed Cutters,** both cylinder and lever, and

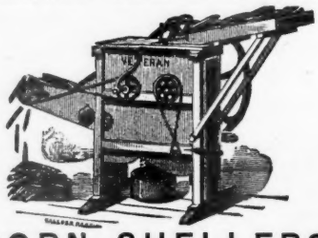
**Belcher & Taylor's Root Cutters.**

For full description, send for illustrated catalogue and price list. Address,

THE BELCHER & TAYLOR AG'L TOOL CO.,
Chicopee Falls, Mass.

---

## HAND and POWER




## CORN SHELLERS.

Horse Powers and Jacks for Farm, Jobbing, Mill, and Warehouse work. For circulars and prices, address **Sandwich Manufacturing Co.,** SANDWICH, Illinois

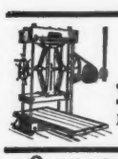
---

## $10 WILL BUY
## THE NOYES FEED MILL,

which, attached to your 10-foot Wind Mill, will supply all your stock with ground feed. Satisfaction guaranteed. Send for circular. Special offer to the first purchaser in any locality.

**L. W. NOYES,**
86 Market St., Chicago.

---

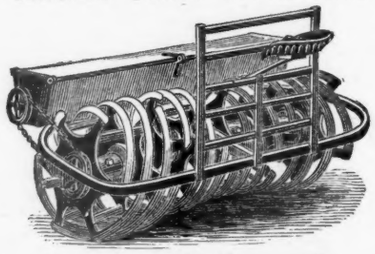


## CIDER
### Presses, Graters, Elevators, &c.

**BOOMER & BOSCHERT PRESS CO., Syracuse, N. Y.**

---

## CHICAGO SCREW PULVERIZER.



### Does Pulverization pay?

ABILENE, KANSAS, Nov. 10, 1879.

I seeded 3,400 acres of wheat with these machines.... The stand of wheat is now the best I have ever seen on new land. R. J. WEYNESS, Trustee.

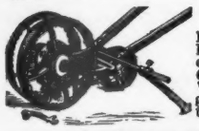
DANVILLE, ILL., Dec. 4, 1876.

This year I harvested, on 190 acres, 6,100 bush. Is of wheat. ....In my opinion the Screw Pulverizer increased the crop one-third over what I could have got by any other method. D. G. MOORE.

Send for pamphlet with cuts, and over sixty letters from men who have the machine. Address,

## Chicago Scraper & Ditcher Co.,

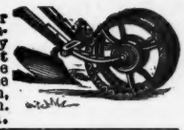
**34 METROPOLITAN BLOCK, CHICAGO, ILL.**

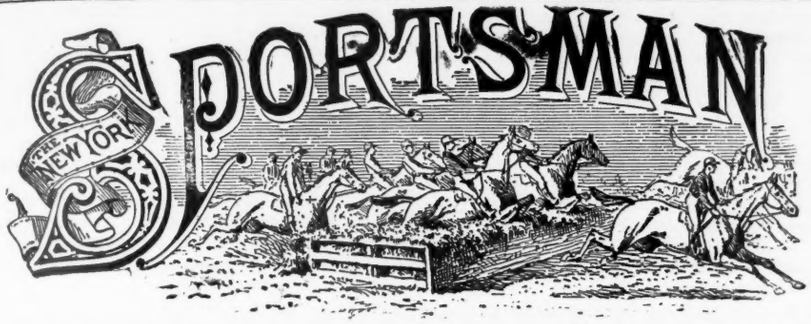


**THE PLANET JR. GOODS.**

**Let every man,** woman and child, whether interested much or little in working the soil, send now for our carefully written catalogue. We want all **Farmers** who value labor-saving tools, to study out our combined Horse Hoe, Cultivator, and coverer; **Market Gardeners** who have acres upon acres, on each of which our Double Wheel Hoe will save its cost yearly, to examine the merits of our fine garden tools; and every one who has even a small vegetable garden, to read closely what the Firefly Hoe and Garden Plow will save them.

**S. L. ALLEN & Co., 229 Market St., Phila., Pa.**






**With Cover of Rich Rose Pink.** Improved, Enlarged; New Material throughout. **Beautiful Pictorial Supplements.** Portraits of **Blue Gown** and Winning Dogs in Field Trials. Field Sports of the Dog and Gun. Important Truths for Breeders of Horses, &c. Correspondence from All Parts of the Country. Editorial Articles and Comments weekly. All the Sporting News of the World.

**Price 10 Cents, on all News Stands. Subscription Yearly, invariably in Advance, $3 00.**

**P. O. Box 2950. WYSE & CO., Proprietors, Tribune Building, New York.**

**CHARLES J. FOSTER, Editor.**

Sample copy sent, postpaid, on receipt of 10 cents.

# Maynard's Rifles and Shot-Guns.

## PRICES REDUCED.

For **Hunting** and **Target Practice, at all ranges,** the **"MAYNARD" more completely supplies the wants of Hunters and Sportsmen generally, than any other Rifle in the world,** as many barrels can be used on one stock; and for ACCURACY, CONVENIENCE, DURABILITY, and SAFETY, is not excelled. ☞Send for Illustrated Catalogue, describing the **new attachment for using rim and centre-fire ammunition.**

**MASS. ARMS COMPANY, Chicopee Falls, Mass.**

**Another New Knife.—MAHER & GROSH,** Cutlers, **Toledo, Ohio,** will send knife like cut, post-paid, for **75c.**; Blades are made for keen, clean cutting; handle has no corners.—"*Of the 24 knives received from you all have given satisfaction.*" D. F. Cully, Dalton, O.—"*The knife I bought of you is the best I ever had.*" J. F. Lyman, Kellogg, Iowa.—"*Your goods when used prove what you say about them.*" R. B. Rollin, Tawas City, Mich.—The above are samples of letters received by us every day. If our goods were not *good*, we would not be allowed to advertise them here. Will you not help us by your patronage? **Can send you good 1-blade, 25c.; extra strong, 50c.; medium 2-blade, 50c.;** extra strong 2-blade, made for hard service, (see cut in Oct. No.), **75c.** *Our Best* 2-blade, oil temper, **$1.** Ladies' 1-blade, **25c.**; 2-blade, **50c.** *Pruners*, oil temper, and every blade tested, **$1.** Budders, **65c.** Hunting Knife, **$1.** Illustrated List free. Discount to dealers.

☞ Sample 6-inch, hand-forged Butcher Knife, post-paid. **50c.**

# Stockbridge Manures

**Originated by Prof. Stockbridge, Professor of Agriculture in the Mass. Agricultural College.**

A special manure is made for each **FARM** and **GARDEN CROP,** containing the **Plant-Food** which each particular Plant requires.

## BOWKERS'S PHOSPHATES AND LAWN DRESSING.

These are the very best articles of the kind manufactured. Prices reasonable, and all goods guaranteed.

**ANIMAL MEAL** for Fowls and Swine, will make your **HENS LAY** and **PIGS GROW.**

Made from Fresh Meat, Fresh Bones, and parched and carbonized Grains. Fowl and Swine eat it greedily. Mix a small quantity with ordinary meal and feed as usual. It has been extensively used for five years. Trial Bags of 15 lbs., 50 cents; 30 lbs., $1.00; 100 lbs., $2.50.—Also for Sale a full line of **Special Feeds for Poultry, Swine, and Cattle.**

## BOWKER'S AMMONIATED FOOD for FLOWERS.

**Free from Odor, Clean as Sugar, Gives Healthy Growth and Abundant Flowering.** Ask your Grocer or Apothecary for it. Price 35c., which is enough for 12 ordinary house-plants for one year. Trial package by mail, 20c.

**BOWKER FERTILIZER CO.,**

**3 Park Place, New York. 43 Chatham St., Boston.**

Sole Manufacturers of all the above goods, and Importers and Dealers in Agricultural Chemicals. Agents wanted in every County and important Town. ☞ Send for Price Lists and Circulars, giving full particulars, *mailed free.*

Increased facilities for manufacturing at my new mill at **Alliance, O.,** with large increase in sales, has enabled me to reduce the price of my ORIGINAL PURE PREMIUM BONE, which is warranted pure.

Send for Circular with new Price List to

LOUIS SCHILLING, Pres. Excelsior Fertilizer Co., **Alliance, O.**

IMPROVED BALDWIN'S **American Fodder Cutter.**

Simplest and Best. Only three Feed Gears; cuts all kinds of Feed, Hay, Straw and Cornstalks with ease and rapidity. Power Cutters, fitted with our Improved Safety Fly Wheel, these cutters are especially adapted for cutting ensilage. See Oct. number of *Agriculturist.*

Send for illustrated circular.

**C. PIERPONT & CO.,** Manufacturers, New Haven, Ct.

*containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.*

**In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.**

**Back numbers of the "American Agriculturist," containing articles referred to in the "Basket" or elsewhere, can always be supplied and sent post-paid for 15 cts. each, or $1.50 per volume.**

**The German Edition.**—All the principal articles and engravings that appear in the *American Agriculturist* are reproduced in the German Edition. Besides these, there is a special department, edited by an eminent German cultivator. Our friends can do us a good service by calling the attention of their German neighbors and friends to the fact that they can have the paper in their own language, and those who employ Germans will find this Journal a most useful and acceptable present.

**Bound Copies** of volume 39, and of every previous volume back to Vol. XVI. (1857), neatly bound, with gilt backs, Index, etc., are supplied at $2 each (or $2.30 if to be sent by mail). See Publishers' Notes, 2d cover page.

**Clubs** can at any time be increased by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 6 subscribers and $7, may afterwards send 4 names more and $3, making 10 subscribers for $10.00; and so for the various other club rates.

**Terms to New South Wales, New Zealand, Australia, Africa, etc.**—To several inquirers. Under the latest revision of the Postal Union Regulations the price of the *American Agriculturist* (either English or German edition), including postage *prepaid* through, will be covered by 7 shillings sterling per annum. This applies to the above countries, and to all others embraced in the General Postal Union. The simplest mode of remittance is by Postal Money Orders, payable in London, to the order of Orange Judd Company. These can be readily cashed in N. Y. City at a slight discount, which the publishers will cheerfully pay. For Club rates, (postage included), see our second cover page, and reckon 22 cents to the shilling sterling.

**Chilblains.**—"G. N. M." advises the use of a piece of flannel; he says red is best, and we have seen *red* flannel recommended in preference to white for various uses, probably because it is usually thicker. The piece of flannel should be thick enough to cover the heel or other affected part, and is to be worn under the sock for a day or two. Mr. M. writes, that he has used this for many years, and refers its efficacy to the extra warmth which restores the circulation of the skin.

**Secret Medicines.**—Our friends often ask our opinion of this or that extensively advertised medicine, or claimed remedy. We can not give an opinion of that of which we know nothing. The owners of these compounds well know that were the composition of their stuffs known, no one would buy them, hence secrecy is a part of their capital. The writer hereof was for many years engaged in the drug and medicine trade; he has sold to the makers of some of the most popular remedies their raw materials. So far as he is aware the makers of these wonderful "discoveries" use nothing and know of nothing that is not known to others, and as to any special art or knowledge of compounding, that is all bosh. They are a most ignorant set. One of them who used New England Rum as the *menstruum* of his stuff, said that he could find none strong enough, and he always had to "bile it down" before he could use it! There is but just one thing that we know about any of these medicines—we would not advise any one to use them. As to this we make no exception, it is a waste of time to ask our opinion on a matter like this.

**The Vitality of Seeds.**—"J. E. G.," of Mass., who is evidently preparing for next spring's gardening in time, asks us to publish a list showing how long the different vegetable seeds will keep in a condition to be safely sown. Such a list is given in Henderson's "Gardening for Profit" and in other standard works.

## Bee Notes for January.

BY L. C. ROOT.

The bees being now snugly in winter quarters, as previously directed, we may omit any special suggestions for the care of the bees this month, and briefly review a most interesting subject, viz:

Fig. 1.—A CENTRIFUGAL HONEY EXTRACTOR.

### Progress in Bee Culture.

A short time before his death, in 1875, Mr. Quinby (who conducted these Notes for so many years), said: "More progress has been made in beekeeping during five years past, than during forty previous years, and I predict that during the five years to come, progress will be even greater."

Let us briefly note some steps in this progress. Until about 1869, most of the bees throughout the country were in box hives. Although the Rev. Mr. Langstroth had invented the movable comb hive about 1850, only a few of the most enterprising beekeepers adopted it.

With the box hives the surplus comb honey was mostly secured in boxes holding from 4 to 12 lbs. Liquid honey was obtained by killing the bees with brimstone, crushing the combs, with the bee-bread, dead bees, and draining. The dark colored mixture thus obtained was marketed as "strained honey."

The Honey Extractor, fig. 1, for throwing honey from the combs by centrifugal force, invented by Herr Van Hruschka, of Germany, was a grand step in advance, and made the use of movable combs a necessity, as the Extractor was useless without them. I remember the extreme delight Mr. Quinby manifested when the words "centrifugal force," coming from our German friend, solved this difficult problem for us. A square box was at once made, and with the gearing of an old fanning mill, a reel was arranged within the box, and the honey successfully thrown from the combs without injuring them in the slightest degree.

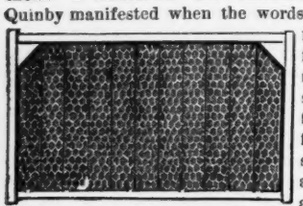


Fig. 2.—COMB FOUNDATION.

I also recall the difficulties in marketing this superior quality of honey. It was a new thing. June honey, with no crushed bees or pollen to give it the familiar color. When candied it was nearly as white as lard, and as unlike the old style of strained honey as whitest syrups are unlike the poorest molasses. Customers did not know it, and when we sent it to the New York market, the poorest grades, which were darker, sold best. But the taste of consumers has become educated, and the best grades of liquid honey are now sought.

About the same time there was a revolution in the style of surplus boxes, and instead of those with two to eight combs, the single comb section boxes have been generally adopted. In adopting the single-comb boxes it was difficult at first to cause the bees to build the combs straight in the frames, and to prevent their building too much drone comb. These difficulties were at last overcome by the introduction of comb foundation, a card of which is shown in a frame, in fig. 2. This foundation is made by running thin sheets of wax between indented rollers, which give it the exact form of the base, and starters of side walls of worker comb. Figure 3 shows a machine for this purpose.

It is not possible to state in this article the many advantages resulting from this invention, or even to enumerate the minor improvements, or to describe the progress made in handling bees. Probably nothing has done so much in this direction as the Bellows Bee Smoker, fig. 4, which was one of Mr. Quinby's last inventions, and has been generally adopted. The beneficial results of the introduction of the Italian bee cannot be over-estimated. The recent efforts of Mr. D. A. Jones, of Canada, in introducing the Cyprian and Holy Land bees, should be appreciated by all interested in beekeeping, but their value is yet to be determined.

If asked "What are the practical results of all these improvements?" I shall be far within the reality if I say that at this time we are enabled to secure double the amount of honey from each swarm. The average amount of honey from the box hives was very limited. Reports have been given from time to time in these Notes of the yield of honey from three hives during the season just finished. We give their total yield as follows:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| No. 1 gave of Fall Honey, | 34¾ | lbs. | Total for Season, | 214½ | lbs. |
| " 2 | " | " | " | 23¾ | lbs. | " | " | " | 212 | lbs. |
| " 3 | " | " | " | 35½ | lbs. | " | " | " | 264¾ | lbs. |

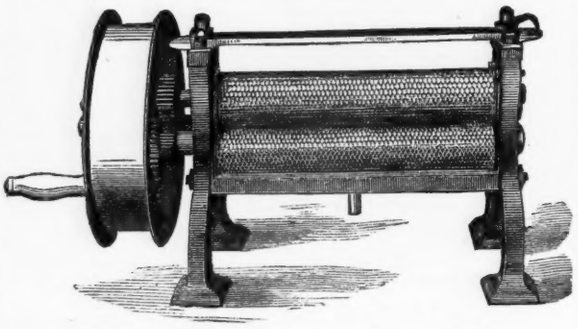


Fig. 3.—MACHINE FOR MAKING COMB FOUNDATION.

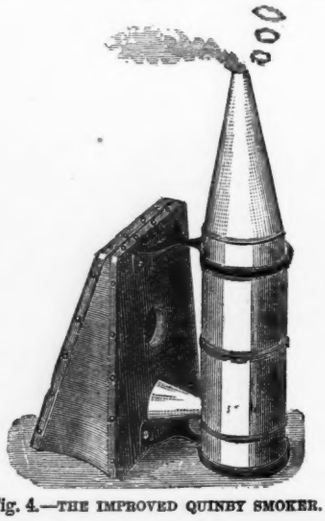


Fig. 4.—THE IMPROVED QUINBY SMOKER.

These figures show in a measure the possibilities of the present system; in a more favorable season the yield from these swarms would doubtless have been largely increased, if not doubled.

## How was Your Letter Lost?

Nobody means to be careless; few will acknowledge themselves so, until it is positively proved. Yet there must be a great many such, even among those intelligent people who write letters, as witness: Of the 866,593,572 letters mailed in the United States during the last official year, 3,057,141 went to to the Dead Letter Office, or one in every 283! despite the fact that more than half of all the letters mailed contained the address of the sender, so that they were returned instead of going to the Dead Letter Office. At this ratio, of say 135,000 letters intended to be sent to the *American Agriculturist* Office, 477 would have gone to Washington. But 2,560,402 of the Dead Letter letters were those "uncalled for," leaving about half a million (497,739) defective from other causes, thus: 284,503 were put into the post offices without postage stamps; 201,899 were lacking in proper direction; and ☞9,167 bore no superscription whatever—either to tell who from or who for! Surely 497,739 defective letters show carelessness. Of those sent to the Dead Letter Office 21,974 contained notes, checks, and drafts, amounting to $1,526,217, and 27,000 other letters enclosed $49,438 in money. But we believe *our* subscribers and correspondents, as a class, are unusually intelligent and careful, and the facts confirm this belief, as few letters directed to this office are lost. There have been a few, however, and these cases the above facts and figures will doubtless explain. We desire to add, that of the letters received, very frequently the writers *omit* to give their names or post offices, and still more frequently omit to name their *State*, a very troublesome matter when there are 43 Washingtons, 30 Lincolns, 25 Jeffersons, 25 Springfields, 24 Madisons, 23 Jacksons, 20 Summits, 13 Centers, and 114 Centers with a suffix, etc., etc. That some of our people are careless is well shown by several instances, of which we will name two, for example: *First*, We received a subscription letter, for one year, from a bank cashier, containing over $30,000 in checks, drafts, etc. The bank for which the enclosure was intended received a letter containing $1.50! *Second*, A correspondent sent us a remittance, not giving his own name or address. Two weeks after a letter in the same handwriting scolded us roundly for inattention, and the second letter was unsigned! In neither case does the envelope show where the letter came from!

### Interesting Postal Items.

During the past official year there were put into the U. S. Mails over 2,215 million pieces, viz.:

| | | | |
|---|---|---|---|
| Sealed letters | 866,593,572 | Magazines | 53,472,276 |
| Postal cards | 276,446,716 | Merchandise articles | 22,634,456 |
| Newspapers | 695,175,624 | | |
| Books, circ'lars, &c. | 300,845,480 | Total | 2,215,168,124 |

(Such aggregate figures are not readily apprehended in detail. To count them one by one, 20 a minute, 10 hours a day, 300 days in a year, would take a person over 615 years?) . . . . The public mail routes of the United States aggregate 343,888 miles, or equal to 13 times around the world. Of these routes the Railroads occupy 85,220 miles; Steamboats, 23,320 miles; Stages, etc., 235,248 miles. The total distance the mails were carried on these routes amounted for the year to 178,227,000 miles, equal to over 7,000 trips around the world, or 370 trips to the moon and back, or nearly a trip to the sun and back. The Railroads took 96,497,463 miles of the mail travel, the Steamboats, 5,668,578, and other routes, 76,070,995 miles. . . . There are 60,479 employees of the United States engaged in handling the mails, including 42,989 postmasters. . . . Money orders numbering 7,461,909, amounting to $101,012,235, were issued during the year. The Money Orders sent to and received from other countries were:

| *Sent to* | *No.* | *Amount.* | *Rec'd from.* | *Amount.* |
|---|---|---|---|---|
| Great Britain | 116,773 | $1,625,943 | 18,912 | $338,095 |
| Germany | 63,885 | 1,014,462 | 22,655 | 637,157 |
| Italy | 6,935 | 167,834 | 450 | 13,791 |
| Switzerland | 7,603 | 130,602 | 2,710 | 78,662 |
| Canada, etc. | 25,985 | 511,617 | 23,213 | 432,750 |
| France (3 months) | 823 | 13,886 | 210 | 5,104 |

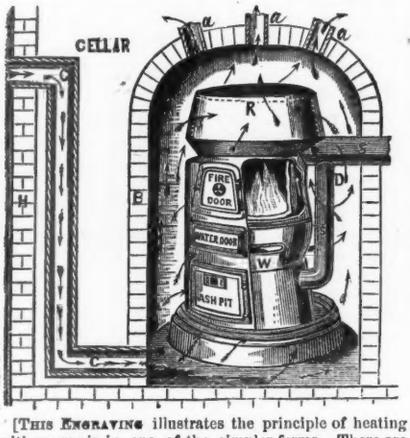
The grandest features of the mail system is the "Universal Postal Union," which began only 5t

years ago (July 1, 1875), and now embraces the whole world, excepting a few South and Central American States, viz.: Chili, Bolivia, Paraguay, Nicaragua, Guatemala, Costa Rica, some Colonies of West Africa, parts of China and Australia, New Zealand, and a few other important points. With these exceptions, half-ounce letters go between all other countries for 5 cents, newspapers for 1 cent per 2 ounces, and packet samples of merchandise of limited sizes, half a cent per ounce. Letters to the Canadas, except Newfoundland, 3 cents per one-half ounce.—Well may Postmaster-General Maynard exclaim in regard to the Universal Postal Union: "Nothing [else], in my opinion has contributed as much to a state of universal peace and amity, or to promote civilization and disseminate truth and correct principles. It is a long step forward in the onward march of human progress. The brotherhood of man becomes thereby less and less a merely ideal relation."

The total mail exchanges during the year, between the United States alone and foreign countries amounted to 34,579,702 Letters; 1,708,362 Postal Cards; 29,835,360 packets of newspapers and printed matter; 362,500 packets of merchandise samples.

## Hot-Air Furnaces the Most Healthful.

The warming of houses, healthfully and economically, is a matter of great interest in millions of homes, especially at this season. Despite the prejudice against what are called hot-air furnaces, properly *warm*-air furnaces—there are sound philosophical, practical reasons for considering them




[This Engraving illustrates the principle of heating with warm air in one of the simpler forms. There are many modifications and improvements, giving larger heating surfaces, etc. This Furnace is in a space arched by the brick wall, *B*. Through the house wall, *H*, and above the ground surface, a large opening, covered with a wire-screen, admits the fresh air into the broad wooden box, *C*, *C*, and it enters the bottom of the furnace-chamber. This air is warmed by contact with the walls, and the *outside* of the furnace itself, and ascends into the rooms through the tin pipes, *a*, *a*, *a*. A large iron basin, *W*, always to contain water, saturates the air with moisture. Unless they have a large surface, there should be two or more of these basins. The Fire or Coal Door, the Water Door, and Ash-Pit Door in the actual furnace open outside the surrounding brick enclosure. The hot air rising in the center of the double wall radiator, *R*, descends inside its outer wall to the base, and rising again through the smoke-pipe *s*, *s*, goes into the chimney deprived of a large portion of the heat. For a stronger draft to start the fire, the damper, *D*, can be opened. It will be seen that in such an arrangement the fresh air does not come in direct contact with the hot iron or fire-brick immediately surrounding the fire.]

superior in point of healthfulness to stoves, steam or hot-water pipes, or open fires—provided three simple, easily secured requisites are looked after. A proper furnace is one which has so large a heating surface that the air passing through it does not come much in contact with very hot iron plates—those heated bright red—as these may sometimes deoxidize the air a little—seldom enough to hurt it. *Second*, the air passing through the furnace should come in pure and fresh through a large draft pipe or box extending to *outside* the house, and not be impure air from decaying vegetables in the cellar. Such draft boxes are provided in putting up any well arranged furnace. *Third*, and most important, ample supplies of water in open pans should be placed inside the furnace air chambers, and always contain water, to supply moisture to the warmed air ascending into the rooms. To the lack of this, most of the prejudice against warm-air furnaces is due. We use all that the furnace makers supply, and add an extra water pan or two.

Now let us go into a room to be heated. If with a stove, there is a lack of moisture, because warmed air secretes or hides much moisture, gets hungry for it, so to speak, and draws it from the lungs, and the furniture even, unless the stove is covered all over with open water pans. Steam or hot water pipes and radiators in a room do the same. Their *outer* surface is dry and supplies no moisture. Stoves, iron water or steam pipes, and open fire places give out much of their heat by radiation, in straight lines. They make one side of a person warmer than the other, and it is, or should be, known by every one, that "colds" result largely from *inequality* of warmth in different parts of the body. Then, the fresh air entering rooms thus warmed, must come in in a cold draft, however it is admitted, whether through cracks, or openings purposely provided to admit it.

But the copious supplies of air, fresh from outside, tempered warm in passing through the furnace, and moistened there, comes up into the room, spreads all around one, and is healthful everyway, unless one stands right over the register and gets overheated in part of the body. As warm air thus admitted to a room first rises to the top, if ventilators or openings be made near the floor, the cold and impure air will be driven down and out through these, and the whole room will soon be of a genial healthful warmth, if the heating capacity of the furnace be sufficient. There is a great deal of nonsense put forth about open fireplaces which radiate heat and warm one side while the other is cold. As for ventilation, a little cold air *may* come down the chimney while the hot air goes up, but there is nothing like the supply of pure fresh air that comes up from a warm-air furnace. A stream of such moist, fresh air passing into a sleeping room through a 4 by 6 inch register is good and healthful to sleep in, if not so warm as to debilitate. It crowds out the impure air produced by breathing.

As to economy, a good furnace constructed with large surfaces utilizes nearly all the heat from the coal or wood, little of it escaping up the smoke-pipe, and is much more economical than a stove or fireplace which sends half or two-thirds or more of the heat up the pipe or chimney. So, for health, comfort, and economy, choose a good, properly arranged furnace, wherever it can be afforded. The saving of fuel can be made to pay a considerable interest on its cost.

## Sundry Humbugs.

At the beginning of the year a word to many new readers as to the object of these columns. It is to protect the public generally, and especially rural residents, from becoming the victims of the various sharpers who seek to "live by their wits." These swindles are seldom heard of in cities, as they are either related to the farmer's occupation, professing to benefit him, or are founded upon the fact that the farmer, leading a comparatively isolated life, learns but little of the ways of rogues, and being honest himself, is slow to suspect dishonesty in others.

### Signing One's Name.

A young man traded a poor for a good horse, giving his note of $90, payable by agreement, six months after *date*, without interest. When called upon for payment he claimed that it was not due by any means, and a careful examination showed that it read "payable six months after *death*." In this case the father prevailed upon the young man to pay the note, on the ground that "he (the son) was in a fair way to have plenty of other accounts to settle about the time the note, as written, would be due."—This is an illustration of how easy it is to entirely change the purport of a written agreement so as not to be noticed by the casual observer. In this first number of the volume, we wish to impress our former advice upon every reader, especially farmers, namely, *not to sign any paper for a stranger*. Millions of dollars have been filched from farmers who have thoughtlessly, or carelessly, or ignorantly signed their names. Beguiled by the promises of large profits, they have undertaken to act as "agents" for this, that, or the other invention, or a lot of implements, new patents, spring mattresses, etc., etc., with the guarantee that all not sold would be taken back. They give notes for the payment with the verbal (or may be *separate* written) agreement that the note will not be collectable if the articles are not sold. But the seller soon disposes of the good note at a bank or elsewhere and disappears. His guarantee amounts to nothing, he is out of reach, and the innocent buyer of the note collects it. Very often the victim signs what he supposes is merely an order for the articles with his address for having them correctly forwarded, but the swindler has adroitly got his signature to a very different document. The only safety is to NOT *write* one's name and *not even make a pen mark for any stranger whatever*—under any circumstances.

### Lotteries Still Flourish.

One would suppose that the Lottery and the Gift Concert business, with their exclusion from the mails by laws of Congress, and the sale of tickets made illegal in all but few of the States, might be suppressed. Yet papers that regard themselves as respectable, advertise them conspicuously, and the occasional spurts of the police upon the lottery dealers in New York and other cities have little other effect than to advertise them gratuitously. There is an abundance of law for their suppression, but laws do not execute themselves. A letter from a friend in Pennsylvania, who sends a lottery advertisement, in which tickets are advertised from a place not far from our office, suggests that "there is nothing to prevent the arrest and punishment of the persons."—Oh yes, there is much.—Arrests have been made without number, the parties give bail, and that is the last of it; in a few days they may be found carrying on the business at the old place. There are two visible facts in the case: the lottery managers have immense sums of *money* invested in the business; and the cases never come to trial.

### "County Histories."

Some publishers in the interior of the State are complained of. To help the project of getting up sundry "Histories of Counties," the postmasters and leading clergymen are asked to give their endorsement to the enterprise. These liberal-minded gentlemen, wishing to encourage what seems to be a useful work, give it their endorsement. In due time, each finds a volume of the History at his house, with a bill asking him to pay $12. Upon a refusal to pay, each is shown that he had signed a regular subscription contract, when he gave the book the weight of his name. Then follow threats, and the worst of it is, they appear to have succeeded in extorting the money in most cases. Some of the counties must have rich histories to make a bookful of them worth $12. These publishers appear to be "making history" quite rapidly, in more senses than one. The case has more than a local interest, inasmuch as other counties are to be done historically, and probably their leading citizens done for—pecuniarily.

### Proof Necessary.

We cannot "show up as a humbug," any one on a charge unaccompanied by proof. A person writes from Illinois that he ordered a "Voltaic Belt," "according to the thirty days' trial advertisement," and returned it, "and that is the last I ever heard of the belt or the money." The party is not a subscriber, but if we will expose the "Voltaic Belt"

people and send him a copy of the paper, he will pay for it "by return mail." One sentence is particularly good; he says: "If they are a humbug [just before he was sure of it], they ought to be exposed before they are allowed to swindle more unfortunate fools like myself." As Pope, we think, hath it: "Know then thyself." Both accuser and accused are equally unknown to us, yet the writer expects us to *see* that he is all right and the other one all wrong, and to publish it too. Both for our own safety and in justice to the accused parties we absolutely decline all such requests.... This will be a sufficient reply to a Massachusetts clergyman, who severely denounces a chap in Maine who is said to be advertising in his wife's name his "New Principles" of Bee-keeping. The letter does not even state in what manner the writer feels he has been wronged.

### "Flashy Variety Business."

Recently we suggested that parents should always *know* what printed matter their children received by mail, and illustrated its importance by a case from home experience. Very few have any idea of the extent of what, for the want of a better name, we call the "Flashy Variety Business." The catalogues of these concerns are often thick pamphlets, filled with descriptions of books, and other articles offered. Many of these things are of a pernicious character of which a properly bred youth should not even know the existence. Here for example is L. Pratt's circular—the worst we have yet seen. Such works as "Secrets of Love, and Mysteries of Matrimony;" "The Darling Creatures Unveiled;" "Three Fast Widows," are among the least objectionable titles of the books offered. The fact that it is announced in large type "all Packages SECURELY SEALED, and the Strictest Secrecy can be Relied upon," will give some hint as to the character of the books, etc., sent out. The only safe course is to have all printed matter received by mail examined before it goes to the children.

### Discredited in the Mails—Important List.

The law excluding from some mail facilities, parties known or believed to be guilty of fraudulent practices, is doing a great work in protecting the people from loss, especially as the Post Office officials are sparing no effort to make the law fully effective. We give below a long official list brought up to date, of those to whom the Department refuses to pay Money Orders or to deliver registered letters. As these names do not reach people generally, we propose to give, in each number of the *American Agriculturist*, the new names thus gibbeted in the Department at Washington. Our readers will find this list of much use, and we advise them to preserve the names given in each paper, if they do not keep the papers, as it is well to do, and refer to these "prohibited names" when receiving circulars, etc.

Allen, H. D. P., New York.
Ballard, P., 260 Greenwich-st., New York.
Bartelle, B. C. & Co., Gloucester, N. J.
Baxter & Co., 7 and 17 Wall-st., New York.
Benedict & Co., New York.
Bennington, A. B. & Co., Lansing, Iowa, *alias* Jace Marks
Benton, D. V., Laramie City.
Boardman, R. M., Louisville, Ky.
Bornio & Bro., N Orleans, La.
Brain, John C., New York. *alias* Excelsior Mfg. Co. Sheffield Fire-arms Agency.
Brookes, Chas O., 128 West-st., New York
Buchanan, Prof. John, M. D., Phila, Pa., *alias* Nat'al Eclectic Medical Ass'n. Eclectic Med'l Co'lge of Pa. Am. Univ'y of Philadelphia. Univ'y Coll'e of Pharmacy.
Burrow, John, Bristol, Tenn.
Burtnett, H. A., New York.
Cateley, Alfred New York. *alias* Fam'y Sew'g Ma. Co. Comb'n Sew'g Machine Co. Standard Sewing Mach. Co.
Chase, A. & Co., N. Haven, Ct.
Clark & Co. *alias* Silver Mining Co., New York.
Clark, J. G. & Co., Chic'o, Ill. *alias* L. G. Clark. L. D. Herrick.
Combination Sew'g Mac. Co., *see* Alf. Cateley, N. York.
Commerford, T. J., N. York.
Commonwealth Distrib'n Co., Louisville, Ky., & N. York
Conlon, J. P., 599 Br'way, N.Y.
Creighton, W. C., *alias* B. H. Porter & Co., New York
Crest, John Elkhart, Ind., & Augusta, Mich *alias* W. J. Hill C. H. Walker. C. Wade.
Dayton, John, 1212 Broadway, *alias* R. Field & Co., N. Y.
Doe, John, New York. *alias* Arnould, Jas., 151 Eldridge-st.
Bell, Jas Belmot, David, 133 Division-st.
Clark, M., 50 Delancey-st.
Clemens, M., 1681 First-av.
Frenks, An, 151 Eldridge-st
Hudson, Jas., 1681 First-av.
Kent, Thos A Lambert, 13 Suffolk-st
Muller, Jas., 50 Delancey-st.
Muller, L. Rand, Thos., 88 Allen-st.
Duff, J. Duff, J & Co., 42 Nassau-st. New York.
Duffee, Manning, *alias* Bell, C. & Co., 1215 Br'way, N. Y.
Edgerton & Co., Camden, N. J.
Elias Ellis H., *alias* Russell & Co., New York.
Emerson Jos. Emerson & Goss, 180 Broadway and 35 Fulton st., New York.
Evarts, Barnes & Co., N. York
Family Sewing Machine Co., *see* Alf. Cateley, N. York.
Foxwell, Chas. & Co., N. York
Frankfort School Fund Lottery, Louv'e & Glas'w Ky
Garcia, I., 187 Ex pl., N. O., La
George, Jas. W. & Co., N. Y.
Glore W. Scott, Louis'v'e, Ky.
Goldsmith, J. & Co., St. Stephen, N. B., Canada
Goldwater, Mich'l, Prescott, Arizona.
Gray, Wm., care of Mr. Sacks 506 Fifth-st., New York.
Gr. West'n Distribution Co., *alias* Mathews & Co. Kunnecke & Co., Cheyenne, Wy.
Gustavus, E. & Co. *alias* F. E. G. Lindsay, Holston, Va.
Hall, J. H. & Co., New York.
Hamilton, Thos. J., *alias* Dr. Mattison New York.
Hamilton, J. B. & Co., N. York.
Harris, James, Care of Mr. Grampps, 253 E. Ch. street, New York.
Harris, O. W., New York.
Henly, A. *alias* Michael & Co. Atlanta, Ga.
Henry, J. C. & Co., *alias* Clarence W. Miller, Glens Falls, N. Y., and Chester, Pa.
Herrick, D. P. & Co., N York.
Hill, W. J., *alias* C. W. Whitney & Co., Elkhart, Ind. Augusta, Mich., and Battle Creek, Mich.
Hubbell, W. F., New York.
Hull, H. H., *alias* Unit. States Agency, Mt. Winans, Md.
Hunt, Chas. E. Hunt, Nettie W. Philadelphia, Pa.
Jones, Albert W., *alias* R. M. Boardman & Co., N. York.
Jones, Edgar W., Ashland, Mass. and South Framingham, Mass., *alias* Harry J. Littleton & Co.
Union Purchasing Agency.
Union Publishing Co.
Magnetic Watch Co
Jorda & Puig, N. Orleans, La.
Joyce, John P., Covington, Ky.
Kendall, L. A., Boston, Mass. *alias* Ashman, L. A.
Bay State Organ Co.
Eastern Gun Works
Enterprise Publishing Co.
Home Delight Co
Hub Manufacturing Co.
Hub Watch Co
Inventors and Manufacturers' Association.
Japanese Curiosity Co.
New Engl. Scientific Works.
New England Man'g Co.
Paris Art Co.
Parisian Photograph Co,
People's Paper Pub'g Co.
The Welcome Guest.
Kennucke, F. Kennucke & Co Kennucke, The Messrs. Cheyenne, Wyo.
Kentucky State Lottery, Covington and Louisville, Ky., and New York.
Kosboth, R. J., *alias* Mutual Stock Companies, Nos. 1 and 2, New York.
Kratzer, D. A., Burlington, Ia.
Lawrence & Co., New York. *alias* Adams, Brown & Co. Allen, Jordan & Co. Barnes, Garrison & Co. Duff, Wm. D.
Lee, Wm. Care of Mr. Stephens 272 E. 3d. st., New York.
Lee, Wm., Care of Mr. Huff, 127 Broome st., New York.
Lindauer, Chas. F., 184 Mercer st., New York.
Littleton, Harry J. & Co., Ashland, Mass., and South Framingham, Mass.
McCall, W. T., New York.
McCaulay, S. A., 35 Broadway, New York.
McKay, Hugh. McKay, Hugh & Co., of St. Stephens, New Brunswick. Calais, Me.
Magee, John W., Laramie City, Wyo
Magnetic Watch Co., Ashland, Mass.
Magnetic Watch Co., South Framingham, Mass.
Marcotte Co., 22 New Church st., New York.
Marks, Jace. La Crosse, Wis.
Martin, Geo., 172 Franklin st., New York.
Mattison, Dr., *alias* Thomas J. Hamilton, New York.
Miller, Clarence W., Glens Falls, N. Y.
Murray, France & Co., Louisville, Ky.
Murray, Rev. James, D. D., Haddonfield, N. J. *alias* The Livingston University of America.
Mutual Stock Companies Nos. 1 and 2, New York.
Nassau Banking Co., N. York.
Nathan B., 179 and 838 Broadway, New York.
National Banking Co., N. Y.
Noelke, Chas. D. J., 238 Grand street, New York.
Paris Novelty Co., Boston, Mass., Rockland, Mass., and Chicago, Ill
Patroni, Giovanni, Philadelphia, Pa., and Camden, N. J.
Pattee, J. M., Manager, Cheyenne, Wyo.
Perkins, Howitt, 11 Park Row and 297 Greenw'h st., N. Y.
Philadelphia Stamp Co., Phila, Pa., and Camden N. J.
Porter, W., New York.
Rand, B. 62 Harrison st., N. Y.
Rand, S., care of Mr. Warren, 78 Christie st., New York.
Richmond, M. J., Cov'n, Ky.
Robb, Byron H., Cincinnati, O. *alias* American and European Secret Service Co.
American Detective Newspaper.
Cooperative Commercial Co.
Commercial Reporter Newspaper.
Electro-Magnetic Brush Co.
Incina Co.
Monitor Lamp Co.
Monitor Publishing Co.
Singapore Tobacco Co.
Royce, J. M., Grafton, W. Va.
Russell & Co., New York.
Sherman & Co., Marshall, Mich.
Silver Mining Co., New York.
Slocumb, E. Ellsworth, Boston, Mass., Chicago, Ill., Rockland, Mass. *alias* Agents' Union.
American Book Co.
Crameo, E. G.
Eels & Co.
Eels, D. P. & Co.
Royal Piano Co.
Solar Watch Co.
Star Manufacturing Co.
Suydam, D. P.
Williams, P. W. & Co.
Smalley & Gale, 35 Broadway, New York.
Smith, Geo. R., Covington, Ky.
Standard Sewing Machine Co., *see* Alfred Cateley, N. Y.
Taylor & Co., New York.
Thatcher, Belmont & Co., New York.
Tomlinson, James A., N. Y.
Tully, J. F., 1215 Broad'y, N. Y. *alias* Bell, C. & Co.
Union Publishing Co., Ashland, Mass.
Union Publishing Agency, South Framingham, Mass.
Upington, G., New York.
Veadero, Ciriaco, 69, 71, 73, Broadway, New York, *alias* Martinez & Co.
Castillo, Emilio M.
Wade, C., Elkhart, Ind., Augusta and Battle C'k, Mich. *alias* C. H. Walker.
Waterson, Henry G. Waterson, F. G. Calais, Me.
Webb, Samuel, 126 and 267 Broadway, New York. *alias* Wilson, Wm. S. Wilson, Sam. Luthy & Co.
Whitney, C. W. & Co., Glens Falls, N. Y., Chester, Pa.
Wight, T. Potter & Co., N. Y.
Wilcox & Co., Windsor, Ohio.
Williams, Peter W., Chicago. *alias* E. G. Napa & Co. Victor Napa & Co. Paris Importing House. Paris Book and Novelty Co. John Catlin & Co.
Williamson & Co., 559 Broadway, New York.
Wilson, J. C., Ladonia Texas. *alias* A. J. C. Wilson.
Wintersmith, R. C., Louisville, Ky.
Zsosch, Theodore, 23 Park Row, 851 Broadway, N. Y.

The Official List gives the names of a large number of other parties with a * indicating that they have probably ceased operations under *those* names.

**Stingless Bees.**—It is proposed by W. S. Hawley, of Rochester, N. Y., to introduce the stingless bees of South America as soon as a sufficient number of subscribers warrant the enterprise. The circular states that an article in an Albany paper in September] last, "was

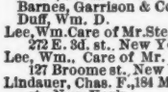


Fig. 1.—QUEEN BEE.

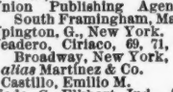


Fig. 2.—SIDE VIEW.

the first intimation the Bee Fraternity of the United States had that there existed anywhere on the habitable globe a species of the honey bee that has no *stingers*."

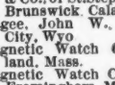


Fig. 3.—A WORKER.

Fig. 4.

Fig. 5.

It was because the "Bee Fraternity" did not read the *American Agriculturist*, as we, in 1861 not only figured and described the stingless bees, but had a colony of the bees themselves on exhibition at our office when it was in Water st. Figures 1 and 2 represent different positions of the queen bee of the *Jicote* variety of the stingless bees. Figure 3 is one of the workers; figure 4 shows the queen of a small yellow variety, with a worker that is still smaller, shown in figure 5.

**The Bottom of a Well.**—Did you ever see the bottom of a well? When the well is partly full of water it is a difficult matter, but it can be done, and we will

Fig. 1.—LOOKING INTO A WELL.

tell how to do it. With ordinary wells it ought to be done often. Illness which the doctors attribute to "miasm" or "malaria" may come from a dead toad or rat in the well. At morning or evening take a common looking glass, not less than a foot square, and turn the slanting rays of the rising or setting sun down into the well. This will illuminate its very depths, making it possible to see the smallest pebbles, leaves, etc. Should foreign articles be discovered they can generally be taken out by a person descending by means of a ladder and using a rake, scoop, or something of the kind—the mirror being held by another person, and still lending its aid. An old tin pail on the end of a pole makes an excellent scoop.

Fig. 2.—THE BOTTOM OF THE WELL.

**Seasonable Information.**—Now, while field and other work is not pressing, is a good time to lay plans, provide for getting on hand, in ample season, such implements, seeds, trees, plants, animals, etc., as will be needed when Spring work opens. There is great advantage in sending for circulars and catalogues, and in corresponding *early* with dealers and manufacturers, and also in being among the first on their order books. They have time now to respond to inquiries more fully, and to provide well for and promptly fill orders received well in advance. Whether in actual want of anything or not, we advise every reader to go carefully through the advertising pages and note what is offered, how offered, by whom, cost, etc. There are many new things of interest; other things, and the way of offering them, will be quite likely to suggest some new ideas to the reader that may be useful.—We offer these suggestions the more readily in regard to our advertising pages, because much care has been exercised and no little pecuniary sacrifice endured in excluding many thousands of dollars worth of advertising offered, because we do not mean to admit *any* advertiser whose wares, or modes of doing business, will be likely to be injurious to the interests of our readers. The rule is, to exclude all patent medicines, all announcements deceptive in form or substance, and all parties whom we have not good reason to believe have both the *ability* and *intention* to do just what their advertisements promise. Misunderstandings, mistakes, and delays in transportation, *sometimes* occur in all human negotiations and transactions; but they should be the exception, not the rule. If any of our advertisers are wilfully or habitually deficient in their dealings, we want to know it and use *their* space otherwise. We *intend* to have our advertising pages just as reliable as the reading columns, as a source of information to the readers.

☞ *We request any one addressing our advertisers, whether for circulars, information, or otherwise, to always inform them that their business cards were seen in this journal. They will know what you expect, and what we expect, in the way of prompt and fair treatment.*

# Three Parties Benefited,

## ALL AT ONCE:

**First: Yourself.**
**Second: Ourselves.**
**Third: [See Below.]**

The Publishers of the AMERICAN AGRICULTURIST invite every reader to consider the following:

By special arrangements, by advertising contracts, and by large cash wholesale purchases, the Publishers of the *American Agriculturist* have secured an excellent stock and large variety of **Good** Articles, including **Useful, Interesting,** and **Ornamental.** Many of these are needed and all are desirable in almost every home.

The contracts for obtaining most of these articles, and our offers of them, extend up to next June.

They are all described, and many of them are Illustrated by Engravings, on an Extra Sheet of 44 pages, which will be sent to every reader desiring it and sending postal address, if one is not already at hand.

Most of the **331** articles described, and several hundred GOOD BOOKS on the Premium Sheet, can be purchased at fair rates, of guaranteed quality.

ALSO: *Any one or more of them can be obtained by any reader at* **Little or No Cost,** *thus:*

The Publishers PRESENT them to those who give attention or time to making the *American Agriculturist* known to others, and who receive and forward subscriptions of old and new subscribers.

Some of the articles are presented in return for two, three, or four subscriptions only, and others for larger lists, according to cost of the Article.

The fact that over **25,000 different persons** have already secured and received one or more of these Articles, and with satisfaction, is strong evidence that it is a practical work, and that 25,000 or more *other persons* may do the same. The reader of this may, and can do it as well as any of the five and twenty thousand who have done so.

The giving of these articles does not detract an iota from the value of the paper itself, or from the amount expended upon it. The Premiums are paid for with money received for advertisements. The giving of these premiums increases the circulation of the paper, and that increases the value of the advertising columns, and brings in more advertising receipts to pay for more premium Articles. It is a simple, convenient way of doing business. No travelling Agents are employed, but *every* reader is invited to act as a friend or voluntary agent, and is paid by premiums for whatever is accomplished in the way of receiving and forwarding subscriptions.

On account of the method of obtaining the Articles, *when* to be given as premiums, much larger pay or commission can be given in this way than could be paid in money—*while the Premium Articles are just as good as their money value, for use or for presents, or for turning into money by selling them.*

1.—The one receiving the articles is benefited by getting desirable things at little or no expense, and usually at little cost of time.

2.—The Publishers are benefited, in the end, or in after years at least, by the increase in subscribers.

3.—The persons who are led to subscribe through the influence of those who receive the premiums, are are also benefited, for it is not possible for any one to read such a journal as this through a year without getting some hint or suggestion that will directly or indirectly be worth *far more* than the small cost of a year's subscription—which, at most, amounts to only half a cent per working day.

To say nothing of the many columns of carefully prepared reading matter, the Thousand or more *Engravings* and sketches in a Volume, bring many useful hints right to the eye and understanding, and for the Engravings alone, it will *pay* every one, everywhere, to have this Journal, no matter how many other journals he may have.

The *Humbug Columns* keep the reader informed, and on the alert against the impositions of swindlers.

In consideration of the above we invite **Every Reader** to make a little effort THIS MONTH to secure and forward the subscriptions of some friends and neighbors. We shall be happy to send the Premium Articles offered, in return for the favor. Please look over the Premium List again now, or send for it, if not on hand. All the particulars are given on pages 5 and 6 of Premium Sheet.

While all the Premium Articles are most desirable, the BOOKS offered are worthy of special attention. Note (in page 8 of the Premium Sheet) that whenever ten or more subscriptions are sent at the regular rate of ($1.50 each) *one dollar's worth* of *good Books* are presented for *each* name.

There ought to be many thousands of MUTUAL CLUBS, of ten or more persons, who contribute $1.50 apiece, and *each* receive this Journal all through the year, besides a dollar's worth of Books for each—the books to be used in common by all.

Tens of thousands of others, Young Men and Old, may and ought to get a personal supply of ten dollar's worth or more of First-Class Books for use, on the easy terms offered. See the fine collection of these Books described on pages 8, 9, and 10 of the Premium sheet. NOTE that ten dollar's worth of the Books can be secured simply by collecting ten subscriptions for the *American Agriculturist* during this winter, at the regular rate of $1.50. With the right spirit and energy this can be done the *first week* of the new year—**though all the above offers are good from now to next June.**

Here are a few of the Premium Articles offered. (See whole List and descriptions in Premium Sheet):

**A Most Valuable Compound Microscope.**
**13 Genuine Gold and Silver Articles.**
**Fine Telescopes, and Opera or Field Glasses, Magnifying Glasses, etc.**
**Complete Telegraph Apparatus (double).**
**Two Excellent Barometers.**
**A Fine Thermometer.**
**Excellent Table Cutlery.**
**Many Kinds of Good Pocket Knives.**
**Unequaled Multum in Parvo Knife.**
**A Magnificent Family Bible.**
**Beautiful Family Clocks.**
**Watches, best for the price we know of.**
**Good Washing Machines and Wringers.**
**Musical Instruments in Variety.**
**Pumps—Two Good Ones.**
**Capital Woven Wire Bed-Mattress.**
**The Best Lamp (German Student).**
**Silver-Plated Ware of Various Kinds, of First-rate, Trustworthy Make.**
**The New Granite Ware Tea Sets, etc.**
**A Variety of Household Conveniences, those Wanted in every Family.**
**Choice Seeds for Field, Garden and Flower Bed; Beautiful Flowering Bulbs.**
**Plants of good Strawberries, Blackberries, Raspberries, Grapes, Currants, Gooseberries, etc.**
**Various Young Forest Trees by Mail.**
**India Rubber Goods for Wear, etc.**
**Skates, Magnets, Paint Boxes, etc., etc.**
**Gold Pens, Pencils, etc.; Scissors, Albums, etc.**
**Sewing Machines, Tools, Tool Chests,** etc.
**Churns, Corn-Shellers, Cider-Mills, Fruit-Driers.**
**Plows, Seed-Drills, Windmills, etc.**
**Farm Grist-Mills, Grindstones, etc.**
**Farm Wagons, Farm Steam Engines,** etc.
**Best Bracket and Fret Saws.**
**TOYS for the Children, in Great Variety, combining the Interesting and the useful; also sundry pleasant Games, etc., for the Home Circle.**
**Guns, Hunting Apparatus, many kinds.**
WHITMAN'S **Halter, Bridle, Bits, etc.**

**And a Hundred other Desirable Articles, all described in the 44 page Premium Sheet, and all offered free to our friends in return for small and large clubs of subscribers.** [See next Item.]

**"Specimen Bricks."**—The following are fair specimen of *thousands* of letters received about different Premiums: JAMES M. HARLAN, of Cumberland Co., Pa., in sending on December 10, 1880, a list of 40 subscribers for 1881, of whom many are new names, says:... "...The Premium Watch I got for subscriptions last year, has proved so far, as good a timekeeper as any $100 watch in the County....I expect to send a good many more names yet, and will choose my Premium later on...." H. R. Shippee, Kent Co., R. I., writes Dec. 6, 1880: "....The Premium Overcoat you sent me is 25 per cent. better than I expected. It is a standing monument of your liberality in premiums and a credit to Jessup & Co., the makers. All the subscribers are greatly pleased with the *American Agriculturist*....."

## The American Agriculturist Clubbed with Other Journals.

In response to numerous requests from our subscribers, relative to obtaining the *American Agriculturist* in connection with other publications, we have made arrangements with a few of the leading Magazines, which will be forwarded in combination with our Journal as follows: [Postage additional when sent to foreign subscribers.]

| *American Agriculturist with* | *Regular price for both.* | *The 2 supplied, postpaid, by us for* |
|---|---|---|
| Scribner's Monthly ($4.00) | $5.50 | $4.75 |
| Scribner's St. Nicholas ($3.00) | 4.50 | 3.90 |
| Demorest's Monthly ($3.00) | 4.50 | 3.90 |
| Harper's Monthly ($4.00) | 5.50 | 4.75 |
| Harper's Weekly ($4.00) | 5.50 | 4.75 |
| Harper's Bazar ($4.00) | 5.50 | 4.75 |
| Appleton's Journal ($3.00) | 4.50 | 3.90 |
| Popular Science Monthly ($5.00) | 6.50 | 5.50 |
| Atlantic Monthly ($4.00) | 5.50 | 4.75 |

On receipt of subscriptions as above, we deliver the names and pay to the office of publication of the magazines ordered, and should there ever be occasion for complaints of non-receipt of such magazines, these should be made direct to their respective Publishers, and not to us.

## The Poultry Shows for January.

| | | |
|---|---|---|
| Poultry & Pet Stock Ass'n | Germantown, Pa. | Jan. 3- 6 |
| Windham Co. | Brattleboro, Vt. | Jan. 4- 7 |
| Southern Mass. Ass'n | New Bedford | Jan. 4- 7 |
| Saginaw Valley Ass'n | East Saginaw, Mich. | Jan. 11-14 |
| Champlain Valley Ass'n | Burlington, Vt. | Jan. 11-14 |
| Central Mass. Ass'n | Worcester, Mass. | Jan. 11-14 |
| Springvill Ass'n | Springville, N. Y. | Jan. 12-14 |
| Cleveland Poul'y & Pet Stock | Cleveland, O. | Jan. 12-19 |
| Western Penn. Society | Pittsburg, Pa. | Jan. 13-19 |
| Western Poultry Club | St. Louis, Mo. | Jan 12-19 |
| Lancaster Poultry Ass'n | Lancaster, Pa. | Jan. 14-19 |
| Mascoma Poultry Ass'n | Mascoma, N. H. | Jan. 18-20 |
| Vermont State Poultry Ass'n | Rutland, Vt. | Jan. 18-21 |
| Union Pet Stock Ass'n | New Berlin, N. Y. | Jan. 18-2 |
| Northern Indiana Poul'y Ass'n | Fort Wayne, Ind. | Jan. 18-22 |

## Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our record kept daily during the year, show at a glance the transactions *for the month ending Dec. 11th*, 1880, and for the corresponding period last year:

**1. TRANSACTIONS AT THE NEW YORK MARKETS.**

| RECEIPTS. | *Flour.* | *Wheat.* | *Corn.* | *Rye.* | *Barley.* | *Oats.* |
|---|---|---|---|---|---|---|
| 26 d's *this* m'th | 497,000 | 5,315,000 | 5,261,000 | 259,000 | 546,000 | 932,000 |
| 27 d's *last* m'th | 524,000 | 7,836,000 | 6,119,000 | 413,000 | 987,000 | 1,481,000 |
| SALES. | *Flour* | *Wheat.* | *Corn.* | *Rye.* | *Barley.* | *Oats.* |
| 26 d. *this* m'th | 424,000 | 31,907,000* | 9,885,000* | 186,000 | 942,000 | 3,414,000* |
| 27 d. *last* m'th | 597,000 | 26,563,000* | 12,609,000* | 354,000 | 1,106,000 | 3,621,000 |

* Including forward delivery.

**2. *Comparison with same period at this time last year.***

| RECEIPTS. | *Flour.* | *Wheat.* | *Corn.* | *Rye.* | *Barley.* | *Oats.* |
|---|---|---|---|---|---|---|
| 26 days 1880 | 497,000 | 5,315,000 | 5,216,000 | 259,000 | 546,000 | 932,000 |
| 25 days 1879 | 526,500 | 6,127,000 | 4,036,000 | 589,000 | 602,000 | 916,000 |
| SALES. | *Flour.* | *Wheat.* | *Corn.* | *Rye.* | *Barley.* | *Oats.* |
| 26 days 1880 | 424,000 | 31,907,000 | 9,885,000 | 186,000 | 942,000 | 3,414,000 |
| 25 days 1879 | 465,000 | 28,817,000 | 5,902,000 | 354,000 | 611,000 | 1,805,000 |

**3. *Stock of grain in store at New York.***

| | *Wheat.* bush. | *Corn.* bush. | *Rye.* bush. | *Barley* bush. | *Oats.* bush. | *Malt.* bush. |
|---|---|---|---|---|---|---|
| Dec. 6 '80 | 5,670,242 | 2,508,381 | 166,054 | 163,592 | 807,992 | 116,641 |
| Nov. 8 '80 | 3,775,143 | 2,919,519 | 21,826 | 46,024 | 928,079 | 117,113 |
| Aug 10 '80 | 3,046,6 7 | 1,784,441 | 46,004 | 25,283 | 78,910 | 202,556 |
| Oct. 8 '79 | 2,197,398 | 1,672,136 | 27,312 | 31,211 | 578,056 | 207,729 |
| Dec. 8 '79 | 9,249,862 | 1,249,734 | 422,873 | 454,157 | 432,106 | 175,205 |
| Dec 19 '78 | 3,910,457 | 3,520,555 | 602,206 | 965,577 | 1,283,994 | 133,069 |

**4. *Exports from New York, Jan 1 to Dec 8***

| | *Flour* bbls | *Wheat.* bush. | *Corn.* bush. | *Rye* bush. | *Barley.* bush | *Oats.* bush. | *Peas.* bush. |
|---|---|---|---|---|---|---|---|
| '80 | 3,756,000 | 59,119,000 | 48,731,000 | 2,127,000 | 261,000 | 424,009 | 399,600 |
| '79 | 3,441,000 | 62,212,707 | 34,105,000 | 4,013,000 | 167,000 | 523,000 | 381,0 0 |
| '78 | 2,433,166 | 52,166,952 | 25,844,569 | 3,970,465 | 1,518,667 | 3,645,001 | 428,937 |
| '77 | 1,386,875 | 19,833,574 | 25,276,390 | 1,992,620 | 1,936,9 6 | 246,355 | 454,056 |
| '76 | 1,823,050 | 23,606,295 | 16,339,741 | 1,281,929 | 88,097 | 619,118 | 689,246 |

General Merchandise has been in less urgent request, and has shown considerable irregularity, Groceries receding, while Fruit, Metals, Hemp and Fish ruling firm. Rice, Seeds, Leather, Skins and Building Materials improving in price.....Transactions in Cotton large, chiefly in the way of options, at higher though variable figures. .. Petroleum, at advanced quotations. ... A brisk movement in leading Breadstuffs, especially in Winter Wheat, No. 2 Corn, No. 2 Oats, and in Barley. Prices of Wheat have been worked up materially, under speculative manipulation, which, in this, as in several other prominent instances, has been decidedly unfavorable to the export interest. Corn closed irregular, and generally weaker; Flour, heavy; Barley—after breaking seriously—rallied perceptibly; while Oats left off more firmly for future delivery. Extensive purchases of No. 2 Oats on speculative account. Cable advices have been of unsettled foreign markets, though the latest were of a rather more encouraging tenor.....Provisions have been fluctuating rather sharply, particularly Western Steam Lard, which has been in most favor, notably so in the speculative line. Mess Pork has further yielded in value, on a very moderate inquiry. Beef and Beef Hams have been quoted weaker, and slow of sale. Butter and Eggs have been advanced on a fairly active call for supplies. Cheese has been in less request at easier figures. Hops attracted less attention, while Wool met a readier sale, and tended upwards, being lightly offered. ..Hay and Straw brought higher prices, on quite moderate supplies.

## New York Live-Stock Markets.

RECEIPTS.

| WEEK ENDING | *Beeves.* | *Cows.* | *Calves.* | *Sheep.* | *Swine.* |
|---|---|---|---|---|---|
| Nov. 15 | 10,220 | 188 | 3,629 | 41,860 | 52,637 |
| Nov. 22 | 15,243 | 71 | 2,635 | 43,060 | 49,677 |
| Nov. 29 | 12,654 | 164 | 1,716 | 26,687 | 54,101 |
| Dec. 6 | 11,064 | 160 | 2,082 | 29,717 | 55,684 |
| *Total for 4 Weeks.* | 49,181 | 533 | 10,062 | 141,324 | 216,099 |
| *do. for prev. 5 Weeks* | 65,990 | 844 | 19,167 | 191,522 | 230,120 |

| | *Beeves.* | *Cows.* | *Calves.* | *Sheep.* | *Swine.* |
|---|---|---|---|---|---|
| *Average per week* | 12,295 | 133 | 2,515 | 35,331 | 54,025 |
| do. do. *last Month* | 13,198 | 169 | 3,833 | 38,304 | 40,124 |
| do. do. *prev's Month* | 14,306 | 111 | 4,903 | 42,185 | 27,631 |

*Beef Cattle are sold and quoted by the pound of estimated dressed weight—Cows and Horses by the head—Sheep and Calves by the live weight—Live Hogs by the live weight and Dressed Hogs by the carcass weight.*

A Steer in good, fair order, dresses about 56 lbs. to the 100 lbs. of live weight. Such an one weighing alive 1,428 lbs. would dress 800 lbs., and at 10 cents per lb. would bring $80, equivalent to 5¼ cents per lb. *live* weight.

### Prices of Fertilizers.

| | |
|---|---|
| Nitrate of Potash (95 per cent), per lb | 8 @8¼c. |
| Sulphate of Potash (potash 41 per cent), per lb | 3½@4 c. |
| do. do. (potash 37½ per cent, per lb | 1¾@1¾c. |
| German Potash Salts (potash 12 to 15 p. c.), p. ton | $14.00@16.00 |
| Muriate of Potash (potash 50 per cent), per lb | 2¼@2½c. |
| Nitrate of Soda, per lb | 4 @4¼c. |
| Sulphate of Ammonia (25 per cent), per lb | 4¼@4½c. |
| Dried Blood (ammonia 13 per cent), per ton | $48.00@50.00 |
| No. 1 Peruv. Guano, Lobos, ₱ ton | 46.00 |
| do. do. guaranteed, ₱ ton, cargo M. | 56.00 |
| Soluble Pacific Guano, per ton | 45.00 |
| Excelsior Fertilizer Co., Fine Ground Raw Bone | 45.00 |
| Mapes' Complete Manure (clay soils), per 1,000 lbs | 25.50 |
| do. do. do. (light soils), per 1,000 lbs | 25.50 |
| do. do. do. "A" Brand (wheat), ₱ 1,000 lbs. | 20.00 |
| do. Tobacco do. do. | 52.00 |
| do. Fruit and Vine Manure, per ton | 37.00 |
| do. Pure Raw Bone, per ton | 38.00 |
| Matfield Fertilizer, No. 1 | 45.00 |
| do. do. No. 2 | 30.00 |
| Homestead Superphosphate, per ton | 40.00 |
| do Tobacco Grower, per ton | 60.00 |
| Banner Raw Bone Flour, per ton | 45.00 |
| Stockbridge Rye Manure, per ton | 45.00 |
| do. Wheat Manure, per ton | 45.00 |
| do. Seeding Down Manure, per ton | 40.00 |
| Bowker's Wheat Phosphate, per ton | 40.00 |
| Walton, Whann & Co.'s Raw Bone Phosphate, per ton | 40.00 |
| Gypsum, Nova Scotia, ground, per ton | 8.00 |

**It will be seen by referring to our price lists of Fertilizers,** that the pure fine ground bone meal made by the Excelsior Fertilizer Company, at Alliance, O., has been reduced in price ten dollars per ton. Mr. Schilling, the originator of this brand of fine ground bone, says he is able to do this by increased facilities for manufacture, at his new mills at Alliance, and a wider and increasing trade, and at the same time maintain the same excellence of quality, which he warrants pure in every respect, and exactly as represented.


# Standard Series.

Nos. 48 & 49 **Dickens's Christmas Books.**

ILLUSTRATED. 8VO. PRICE, EACH, 25 CTS.
Nos. 12 19—History of England By Knight. Each.....35c.
No. 11.—Self-Culture By Blackie.....10c.
Nos. 21, 22.—Letters to Workmen. By Ruskin. Each...15c.
Nos 30, 31.—Memories of my Exile. By Kossuth. Each..20c.
Young's Concordance. Sample page free.....$3.65
Postage free. Catalogues free For sale by Booksellers, or the publishers, I. K. FUNK & CO., 10 Dey St., N. Y.

**1881.** HOUSEKEEPERS who want to **"TURN OVER A NEW LEAF,"** Make More Money, Dress Better at less expense, make all their surroundings more comfortable, and their Home Life Happier than ever before, should read

**THE COMPLETE HOME,**

The most complete and practical work on Home Affairs ever published. Extremely popular. Sales **rapidly increasing. Agents** are **Making Money very fast.** Thousands more wanted to canvass unoccupied territory. Terms are liberal. **Success is Sure.** Send at once for full particulars. Address, J. C. McCURDY & CO., Philadelphia, Pa.
☞ **Mention this paper.**

**FARMERS** are **MAKING $25 to $50** per week selling **MANNING'S ILLUSTRATED STOCK BOOK**

Because **every farmer actually needs it.** It is the **latest, largest,** and most **complete** work ever issued in America treating of *Horses, Cattle, Sheep, Swine,* and *Poultry*—their breeds, breeding, training, care, and management; their diseases, causes, prevention, symptoms, and remedies. **1000** pages, **400** illustrations, and 2 *superb charts.* **Any one** desiring *profitable* work during the winter should send *at once* for *illustrated* circular and **full** particulars. Address HUBBARD BROS., Pubs., 723 Chestnut St., Philadelphia, Pa.

*The Oldest Bee Paper in America—Established in 1861.*

# AMERICAN BEE JOURNAL,

Devoted to Scientific Bee-Culture, and the Production and Sale of Pure Honey. **$1.50** a year in advance. Send for sample. **THOMAS G. NEWMAN,** 974 West Madison Street, **Chicago, Ill.**

**SCROLL SAWYER.**

This Three-Shelf Bracket Design, size 13x21, and over 300 miniature designs for Scroll Sawing, sent post-paid on receipt of 10 cts. and the names and addresses in full of two active scroll-sawyers. Price of pattern alone, 15 cts. Or send two stamps for Illus. Catalogue of scroll saw goods. I offer inducements to purchasers made by no other house. Liberal discounts to the trade. State where you saw advertisement.

**A. H. POMEROY, Hartford, Conn.**

**EVERY ONE SHOULD HAVE**

**DR. SCHAFF'S BIBLE DICTIONARY.**

*New, Able. Scholarly.*

A handsome and interesting book Containing **400** Pictures, **12** Colored Maps, **958** Pages Price only **$2.50**, postage free. *This work gives the most graphic description of persons and places.*

**THE AMERICAN SUNDAY-SCHOOL UNION.**
Chicago. 1122 Chestnut St., Phila. New York.

**WELL I AM SURPRISED! SO IS EVERYBODY.**

**FOR THE BENEFIT OF CLUB RAISERS**

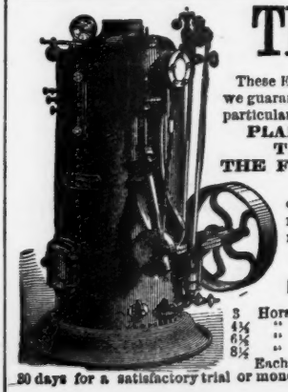
AND OTHERS WHO FAILED TO TAKE ADVANTAGE OF OUR "PREMIUM OFFER" WHICH APPEARED UNDER THE ABOVE HEADING IN THE DECEMBER NUMBER OF THE *AMERICAN AGRICULTURIST.*

**We Have EXTENDED THE DATE to FEBRUARY 28, 1881,**

When all Premium Offers will positively be withdrawn. Specimen copy of *Post* free.

**"THE SATURDAY EVENING POST,"**

**726 Sansom Street, Philadelphia, Pa.**



# The Bookwalter Engine.

These Engines are made of the very best material, by first-class workmen, and are just what we guarantee them to be—safe, simple in arrangement of parts, durable and complete in every particular. Thus they are adapted to the wants of the

**PLANTER FOR RUNNING A COTTON GIN OR CORN MILL,**
**THE MECHANIC FOR DRIVING SMALL MACHINERY.**
**THE FARMER DOING ALMOST ANYTHING REQUIRING POWER.**

The simplicity of their construction enables any one with ordinary intelligence to operate one safely. They are made for durability—yet every part liable to get out of repair can be easily replaced by any mechanic, or duplicates can be secured at reasonable rates.

We quote the following

**EXTRA LOW PRICES FOR FIRST CLASS ENGINES:**

| | | |
|---|---|---|
| 3 | Horse Power Engine and Boiler, with Pump and Governor | $240 |
| 4½ | " " " " " " " " | 290 |
| 6½ | " " " " " " " " | 370 |
| 8½ | " " " " " " " " | 450 |

Each engine is warranted to have fully the power given above. We give the purchaser 30 days for a satisfactory trial or money refunded. Send for a fully illustrated descriptive catalogue.

**JAMES LEFFEL & CO.,** Springfield, O.

# JONES
## OF
# BINGHAMTON.
# HE
## PAYS THE FREIGHT
AND STILL SELLS ON TRIAL.

5-TON HAY COAL STOCK WAGON } **SCALES, $60.**

All Iron and Steel, Brass Beam. No money asked till tested. Every size Scale equally low.

For Free Book address

**JONES OF BINGHAMTON,**
**Binghamton, N. Y.**

---

**75** Or more Pieces of **New Copyright Music**, Vocal and Instrumental, **150 pages** of original and choice **Musical Literature**, **12** elegant full page **Lithograph Portraits**, and a handsome **Free Premium** to all subscribers to the **Folio**, only **$1.60** per year. Send 3-cent stamp for sample.
**WHITE, SMITH & CO., Boston, Mass.**

---

**FREE** TO ALL!—A set of our new Chromo Cards. Novel and original. Send postal card. Johnson, Clark & Co., 30 Union Square, N. Y., Mfrs. of the Light Running New Home Sewing Machine. The Best.

---

**10 CENTS.**
Send 10 cents for an AGENT'S OUTFIT for
**"THE MANNA,"**
Containing **two fine Chromos**, sample copies, Premium List, Subscription List and envelopes. Address,
**J. G. STAUFFER**, Milford Square, Bucks Co., Pa.

---

**DO YOUR OWN PRINTING**
Presses and outfits from $3 to $500
Over 2,000 styles of type. Catalogue and reduced price list free.
**H. HOOVER, Phila., Pa.**

---

**THE CINCINNATI WEELLY TIMES.**
THE BANNER WEEKLY OF THE WEST.
An eight-page paper only **One Dollar** a year, and a magnificent engraving "two feet wide and almost three feet long" free, and postage paid to every subscriber. Address,
**WEEKLY TIMES, Cincinnati, O.**

---

**AGENTS WANTED** EVERYWHERE to sell the best **Family Knitting Machine** ever invented. Will knit a pair of stockings, with **HEEL** and **TOE complete**, in 20 minutes. It will also knit a great variety of fancy-work for which there is always a ready market. Send for circular and terms to the **Twombly Knitting Machine Co.**, 409 Washington St., Boston, Mass.

---

**70** YOUR NAME in Stylish Lettering on 70 Cards (*Gold and Silver Chromos, Cupids, Mottoes, Bouquets, Birds, Winter Scenes, Pictures, etc.*) **10c.** All new styles, lithographed in bright colors. *Unexcelled.* Largest assortment of cards in America. Agts. Complete Sample Book, 25c. Dealers and Printers supplied with Blank Cards. NONESUCH CARD WORKS, Northford, Ct.

---

**JOSEPH GILLOTT'S**
**STEEL PENS**
SOLD BY ALL DEALERS THROUGHOUT THE WORLD.
GOLD MEDAL PARIS EXPOSITION-1878.

---

# A. B. COHU,
197 WATER STREET, N. Y.
Sole Agent for
**BIG GIANT MILLS.**

---

BACK VOLUMES OF
## American Agriculturist.
The publishers of the *American Agriculturist* can supply any of the back volumes of that paper from the Sixteenth to the Thirty-ninth. These volumes contain more varied and interesting information on all matters pertaining to the Farm, Garden, and Household, than can be obtained in books costing three times as much money. Price of each bound volume, at the Office, $2.00; sent post-paid, $2.30.
**ORANGE JUDD COMPANY, 245 Broadway, N. Y.**

---

**OUR HOLIDAY GIFT!**
**ROLLED GOLD RING.**

**A ROLLED GOLD SOLID RING** makes a Beautiful and Valuable Gift for a Lady, Gentleman or Child, and in order to secure new customers for our firm we will forward, post-paid, to any address in the United States, one of our ***Heavy 18 K. Rolled Gold Rings*** (either band or half round), on receipt of ***75 Cents*** in postage stamps, and if you wish we will engrave any ***name, initials, motto*** or ***sentiment*** desired, on the inside of the ring, provided you ***Cut out this Advertisement*** and mail to us with stamps before ***March 31st, 1881.*** At the same time we send your ring we will mail you a bundle of our catalogues and feel sure that you will be so highly pleased with the ring, and that it will give such satisfaction, that you will oblige us by distributing our catalogues among your friends, at the same time showing them the beautiful ring you have received from us. You can in this way assist us in selling other goods of standard quality, which are manufactured from new and original designs, and which we ***Guarantee to give satisfaction.***

**Our Future Sales is Our Profit!**

**Remember,** the ring we send you is ***heavy 18 K. Rolled Gold,*** and that this unprecedented offer is made only to introduce our goods and catalogues in your vicinity. Our firm is well established and reliable, manufacturing ***first-class goods*** from the

**PRECIOUS METALS.**

We can only send out a ***limited number*** of rings at price named, and to protect ourselves from jewelers and dealers ordering in quantities, we will insert this advertisement but ***one time*** in this paper, hence require you to ***cut it out*** and send to us, so that we may know you are entitled to the benefit of this offer. Under no circumstances will we send more than one ring to any person sending us stamps and this advertisement; but after you receive this ring, and others are desired, we will furnish ***18 K. Solid Gold Rings*** at prices given in our illustrated catalogue, varying from ***$2.75*** to ***$9.00*** each. To ascertain the size ring you wear, take a piece of paper and cut it so that it will just meet around the finger you wish to wear the ring on, send the slip to us and we will send a ring that will fit you. State which you want, the ***Band*** or ***Half Round*** ring, and what you wish engraved on the inside. ***Cut this Advertisement Out and send to us, with stamps, before March 31st, 1881.*** You can send stamps by mail at our risk. Address

**Q. W. PETTIBONE & CO.,**
***25 Maiden Lane, New York.***

**OUR HOLIDAY GIFT!**

---

**$50 REWARD.**
Active agents can easily earn $50 per month canvassing for **LEISURE HOURS**, cheapest Illus'd Magazine published. Send 3 cent stamp for sample copy & circular. **MERSHON & CO.**
111 Broadway, New York.
**WIN IT.**

---

**ELEGANT Holiday Present**—48 page Floral Autograph Album; contains Birds, Scrolls, etc.; 15c. post-paid; stamps taken; 47 Select Quotations and a 32-column Story Paper free with each Album. Agents wanted. Address, AMERICAN HOME JOURNAL, W. Haven, Ct.

---

**50** **Finest Chromo, Gilt and Colored, Scroll Cards** ever sold, only 10c. Agents' Samples, 10c.
G. A. SPRING, Northford, Ct.

---

**20** **GOLD AND SILVER CHROMO CARDS**, with name, 10c., postpaid.
**G. I. REED & CO.**, Nassau, N. Y.

---

**50** *All Lithographed* **Chrome Cards**, no 2 alike, **10c.** *Agts. big Outfit*, 10c. GLOBE CARD CO., Northford, Ct.

---

**50** *Gold, Figured*, and *Actress*, **Chromos**, 10c. Agent's Sample Book, 25c. SEAVY BROS., Northford, Ct.

---

**50** All Gold, Silver, Shell, Motto, and Floral Chromo Cards in beautiful colors with name 10c. Agents Sample Book, 25c. Star Printing Co., Northford, Conn.

---

**50** **Gold Chromo, Motto, Horseshoe, Scrolls**, etc., Cards, with name, in Case, 10c., or 25 Acquaintance Cards, 10c. E. H. PARDEE, Fairhaven, Conn.

---

**150** Envelopes and Note Heads, 75 of each, with address and business printed, only **$2.** $2. Carter's Prt'g Office, Plainfield, Ind.

---

**50** **Landscape** *Chromo Cards, etc.*, name on, **10c.**; **20** *Gilt Edge Cards*, **10c.**; *Game of Authors*, **15c.**; **35** *Fun and Acquaintance Cards*, **10c.**; *Samples*, **10c.**
CLINTON & CO., North Haven, Conn.

---

**50** **New Year Cards**, Elegant designs, with your name on each, for 10c.
**C. E. KAY**, New Haven, Ct.

---

**53** Gilt Edge, Chromo, Snowflake, Glass, Lace, etc. **Cards.** Name on, 10c. 11 Packs and 1 Autograph Album for $1.00. Franklin Prt'g Co., Fair Haven, Ct.

---

**64** **Page Autograph Album**, illustrated with 32 Pen Scrolls, Japanese Pictures, etc., and 100 Album Quotations, 15c. 5 for 60c. **J. F. INGALLS**, Lynn, Mass.

---

**1** DOZEN **Artistic Chromo Business Cards**, 6 cts., in stamps. Address, W. JENNINGS DEMOREST, or **MADAM DEMOREST**, 17 E. 14th St., New York.

---

**IT PAYS** to sell our Rubber Printing Stamps. Samples free. J. M. MITTEN & Co., Cleveland, Ohio.

---

**L.** **E. RANSOM**, 34 MAIDEN LANE, N. Y. CITY. **Perfect Butter Color** at lowest prices.

---

# ONLY $875.00!
WE FURNISH THE
## Shaker Separator,
Complete mounted on four wheel trucks, and the
## QUEEN CITY ENGINE,
Complete, mounted on trucks, for $875.00.

This is the best and cheapest outfit of its class ever offered. We warrant it to thresh and clean 40 to 50 bushels wheat per hour. Send for circular.

"From the well-known thoroughness of the Blymyer Manufacturing Co. in other manufactures, we have no doubt of the excellence of the Shaker Separator.

**BLYMYER MANUFACTURING CO.,**
**CINCINNATI, O.**
**Steam Engines, Horse Powers, etc.**

---

**FARMERS WANTING POWER FEED CUTTERS** will find our Ensilage Cutter suitable for dry or green fodder, $75 to $250. Cutters for hand, $7 to $35. "Ensilage of Green Crops, and latest facts relating to this method," price $1. THE NEW YORK PLOW CO.,
55 Beekman St., New York City.

---

**VIBRATOR HARROW.**
Agents Wanted. & Circulars.

Best Harrow made. Cuts every inch of ground, and adapted to all kinds of soil. Peculiar shape of tooth makes it easy of draft and leaves the ground light and mellow. Relieves itself of all obstructions. Bundled very compact for shipment. **Harrows sent on trial.**
**PHELPS & BIGELOW WIND MILL CO.,**
**Kalamazoo, Michigan.**

---

**Gardner's Railway Pitching Apparatus.**

Consisting of Grappling Fork, Carrier, Pulleys, etc. This Fork, Car, etc., has been sold throughout the U. S. and Canada with the greatest success. It has won its way amid the greatest competition of Forks and Carriers, and is without doubt the best Hay and Grain Unloader made. Every farmer should send for a circular now. E. V. R. GARDNER & Co., Johnson's, Orange Co., N. Y.

---

**SEDGWICK BROS.,**

## STEEL WIRE FENCE.
Is the only general purpose wire fence in use. Being a strong net-work without barbs, it will turn dogs, pigs, poultry, as well as the most vicious stock, without danger to either fence or stock. It is just the fence for farmers, gardeners, stock-raisers, and railroads; very desirable for lawns, parks, or cemeteries. As it is covered with rust-proof paint it will last a lifetime. It is superior to boards in every respect, and far better than barbed wire. We ask for it a fair trial, knowing it will wear itself into favor. The **Sedgwick gates**, made of wrought iron pipe and steel wire, defy all competition in neatness, lightness, strength, and durability. Ask hardware dealers, or for price list and particulars address **SEDGWICK BROS., Richmond, Ind.**

---

**FISK'S AUTOMATIC SEED PLANTER**

**PLANTS WITH THE PRECISION OF A HOE**
All the ground a person can walk over in a day.
**THE EASIEST TO HANDLE AND THE FASTEST HAND PLANTER IN USE.**
Every Planter fully warranted and satisfaction guaranteed. Inducements on Samples this season. Send for circular.
**WALLACE FISK, South Byron,**
Genesee Co., N. Y.

---

**TEXAS!** The Southwestern Immigration Company.

It is the purpose of this Company to supply the need of a State Bureau of Immigration, and not to subserve the purposes of any individual, railway, or other corporation. ☞ *No lands bought or sold.* Information furnished those wishing to settle in Texas. Correspondence solicited. Address W. W. LANG, Pres. (*late Master Texas State Grange*) or B. G. DUVAL, Sec. Austin, Texas.

---

**SERIAL CANVASSERS** will receive a circular of one of the handsomest books, on a new subject, by addressing, J. A. WAGENSELLER, Philadelphia, Pa.

THE REASONS WHY

STOCK FEEDERS, AND RAISERS, AND THE PUBLIC

WANT THE

J. I. CASE T. M. CO'S.

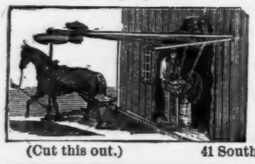
TREAD & SWEEP POWERS,

They cut 10 tons Hay per day.
They grind 5 tons Feed per day.
They saw 18 cords Maple Wood per day.
Elevator men say they are the best made.
Well Drillers need them in a "Dry and Thirsty Land."
Corn Shellers "Run like a top" with them.
For Shops, Mechanics can Saw, Mortise, and Bore.

J. I. CASE T. M. CO., Racine, Wis.,

Manufacture **Portable, Traction,** and **Stationary Engines** and **Threshing Machinery,** with latest and best improvements, including Apron, Eclipse, and Agitator Separators, WOODBURY & PITTS Powers. Manufacture and sell annually more Threshing Machines than any Company in the world. Send for Catalogue.

TAYLOR 1, 2, AND 4-HORSE POWER.



Runs Feed Mills, Feed Cutters, Shellers, Elevators, Churns, Saws, Pumps, etc. Overhead, out of dirt and snow. Simplest, cheapest, best. Dealers in Machines of all kinds. Send for circulars to TAYLOR HORSE POWER COMPANY, 41 South Canal St., CHICAGO.

(Cut this out.)

HEEBNER'S HORSE POWERS

WITH

Patent Level Tread

AND

SPEED REGULATOR.

Heebner's Improved Little Giant Threshers.

HEEBNER & SONS, Lansdale, Mont. Co., Pa.

WELL BORING, ARTESIAN WELL DRILLING & MINERAL PROSPECTING MACHINERY, and how to use, is fully illustrated, explained and highly recommended by the "American Agriculturist" in the November Number 1879. Page 465. Send for it. Portable, low priced, worked by man, horse or steam power. Needed by farmers in every county. Good business for Winter or Summer, and very profitable. Can get good wells in earth or rock anywhere. We want the names of men that need wells. Send for illustrated price-list and terms to Agents. Address,

Pierce Well Excavator Co., 29 Rose Street, New York, U. S. A.

SALEM IRON WORKS, SALEM, N. C.

C. A. HEGE, Proprietor.

The Simplest, Cheapest, Best, and Most Accurate.

Send for Circulars.

Manufacturers of Circular Saw Mills,

With Hege's Improved Universal Log Beam, Rectilinear, Simultaneous Set Works, and Double Eccentric Friction Feed.

T. NEW'S Prepared

ROOFING.

For steep or flat roofs. Applied by ordinary workmen at one-third the cost of tin. Circulars and samples free. Agents Wanted. T. NEW, John Street, New York.

Barrett, Arnold & Kimball, Chicago, Western Agents.

Scribner's Lumber & Log-Book.

NEARLY A MILLION SOLD. Most complete book of its kind ever published. Gives measurement of all kinds of lumber, logs, and plank, by Doyles' Rule, cubical contents of square and round timber, stave and heading bolt tables, wages, rent, board, capacity of cisterns, cord-wood tables, interest, etc. Standard Book throughout United States and Canada.

Ask your bookseller for it, or sent Post-Paid for 35 cents,

G. W. FISHER,
P. O. Box 238, Rochester, N. Y.

AGENTS WANTED FOR THE

SUMMIT

Stove-Pipe Shelf and Utensil Stand, the most convenient article ever offered to housekeepers. Agents meet with greater success than ever. One agent made $192 in 15 days, another $38 in 2 days, another $27 in 1 day. No Freight Charges. Address office nearest you.

SUMMIT MANUFACTURING CO.,
Philadelphia, Pa.; Cincinnati, O.; St. Louis, Mo.

E. & O. WARD, PRODUCE COMMISSION MERCHANTS.

(ESTABLISHED 1845.) Send for Circular of Great Value, giving full instructions for shipping

POULTRY, GAME, BUTTER, and PRODUCE.

No. 279 Washington St., N. Y.

Ref., *Irving National Bank*, New York City.

SHORTHAND writing *thoroughly taught* by mail or personally. Situations procured for pupils when competent. Send for circular. W. G. CHAFFEE, Oswego, N. Y.

Imperial Egg Food.

(Trade Mark.)

Will make Hens lay. Permanently benefits laying Hens, Moulting Fowls, and Young Stock. It makes the Poultry Yard the best paying part of the farm. Packages sent prepaid for 50c. and $1.00. 6 lb. boxes, $2.00; 25 lb. kegs, $6.25, delivered to R. R. Station or Express Co.'s.

CHAS. R. ALLEN & CO., Hartford, Conn.

Wholesale Agents: B. K. Bliss & Sons and J. C. Long, Jr., & Co., New York.—Benson, Maule & Co., Philadelphia.—H. B. Arnold & Co., Boston.—Baker & Hamilton, San Francisco, Cal. —Greensfelder Bros., St. Louis, Mo.

THOROUGHBRED & CROSS-BREED JERSEY STOCK.

10 Thoroughbred Heifers and Cows, 3 to 8 years old.
5 " Bulls, 8 months to 3 years old.
10 " Heifers, 6 to 8 months old.
5 " Yearlings past, in calf.

All the above are registered or entitled to registry in the A. J. C. Club Register.

25 Cross-breed Heifers and Cows 2 to 7 years old. These are a mixture of the two breeds, Jerseys and Ayrshires, the best Family or Butter Cows I have ever bred. All are rich milkers and butter-makers. Some of them 3-lb. Cows. No printed circulars issued. My prices range from $45 for a high grade Heifer Calf, to $500 for the best thoroughbred Cow. Purchasers are invited to examine the Stock in person, in preference to my own selection.

THOMAS FITCH, New London, Conn.

LARGEST AND FINEST

COLLECTION OF

CLYDESDALE

DRAFT HORSES

Ever seen on the American Continent. Also,

HAMBLETONIANS,

And other strains of TROTTING HORSES, Holstein and Devon Cattle. Catalogues sent free. Address,

POWELL BROS., Springboro, Crawford Co., Pa.

"POLLED ANGUS

Or Aberdeen Cattle." Frank B. Redfield, of Batavia, New York, is breeding and importing these famous cattle. I now have a fine lot of young animals waiting to be sent out from Scotland before spring. Send for Catalogue.

WM. CROZIER,

BEACON HILL, Northport, Long Island, N. Y.

Importer and Breeder of Ayrshire, Guernsey, and Jersey Cattle, which always take the Highest Awards at *County, State, National,* and *International* Shows. Southdown Sheep direct from Lord Walsinghan's flock, in England. Berkshires of the *highest type.* Collie Dogs of my own selection on the Highlands of Scotland. An inspection of the stock invited. Only 2 hours from N. Y. City.

85,000,000 RINGS SOLD.

Map of U. S. Showing No. and price of Live Stock mailed free; also Catalogue of Ringers, Rings, Stock Markers, Barbs for Board Fences, Huskers, Ladies, Ditch Cleaners.

H. W. HILL & CO., Decatur, Ill.

BUCHAN'S CARBOLIC

Medicinal Soap.

The Healing, Purifying, and Disinfecting properties of Carbolic Acid are among the most wonderful facts disclosed by modern science. The best, safest, and most convenient method of using this wonderful Curative is in the form of Soaps.

This Soap is highly prized by physicians and nurses for the sick-room. It purifies and disinfects all unpleasant and dangerous odors, prevents the spread of contagion, and is invaluable in curing sores, eruptions, and all cutaneous diseases.

Buchan's Carbolic Medicinal Soap is for sale at all Druggists.

WHOLESALE DEPOT,
KIDDER & LAIRD, 83 John St., New York.

JUST PUBLISHED.

Modern Architectural Designs and Details.

PRICE $1.00 PER PART, POST-PAID.

PARTS I AND II NOW READY.

CONTENTS OF PART I.—Perspective Views and Plans of Queen Anne Cottage; Three Elevations of Same; Framing Plans; Exterior Details; Interior Details; Porch and Details; Four Piazzas and Details; comprising Eight Plates.

CONTENTS OF PART II.—Store Front; Store Counters and Sections; Designs for Brackets; Designs for Gates and Fences; Designs for Window Caps and Hoods; Designs for Architraves and Bases, Wainscoting, Window Sills, and Aprons; Designs, Sections, and Details of Balconies; 6 Elevations and 3 Plans of low-priced Cottages; comprising Eight Plates.

Address ORANGE JUDD CO., 245 Broadway, New York.

L. E. RANSOM, 34 MAIDEN LANE, N. Y. CITY. Importer of Annatto and Dairy Coloring.

GAME FOWL BRED & SHIPPED. Also Sporting Dogs and Cattle, by J. C. COOPER, Cooper Hill, Limerick, Ireland.

NOVELTY INCUBATOR.

I offer this as the simplest, cheapest, and best Incubator in the market. Costing less than 3 cts. per day for oil. Hatches 80 to 90 per cent almost surely. Holds 100 Eggs. Price, $30.00, ready for shipment.

Also NOVELTY HYDRO-MOTHER. Price, $8.50, ready for shipment. Circulars giving full particulars on application.

A. G. ATKINS, Orange, N. J.

A book devoted entirely to PLYMOUTH ROCK fowls, also a separate book on WHITE LEGHORNS, another on BROWN LEGHORNS, a book on curing POULTRY DISEASES, and another entitled HOW TO FEED FOWLS. Either of the above mailed for 25 cts., or all five for $1.00. Address the author

H. H. STODDARD, Hartford, Ct.

$10.00 BRONZE and NARRAGANSETT TURKEYS. Bred ten years for size and plumage. $10.00 a pair. 20 per cent off until Dec. 1st. For pick of flock order now. W. CLIFT, Mystic Bridge, Ct.

INCUBATORS.

The well-known and thoroughly-tested "CENTENNIAL" the Standard Incubator of the world. Durable, Simple, Economical, and Self-Regulating. Also the new and reliable "ACME;" Simple, Cheap, Effective, and Automatic. No sprinkling. Will hatch every fertile egg. Every machine fitted with turning-trays and warranted.

BROODERS: from 20 to 300 chickens. Egg-Testers, etc. Send 3-cent stamp for illustrated circular to

A. M. HALSTED, P. O. Box 10, Rye, N. Y.

POULTRY WORLD.

A monthly magazine, the oldest, largest, and best periodical devoted entirely to poultry ever published. Splendidly illustrated. $1.25 per year. Also the *American Poultry Yard*, the only weekly paper devoted entirely to poultry in existence. $1.50 per year. Both papers for $2.00. A sample copy of both mailed on receipt of nine cents in postage stamps.

Address H. H. STODDARD, HARTFORD, CT.

EGGS for HATCHING, from thorough-bred, prize-winning strains. Send for Circular. T. M. NELSON, Chambersburg, Pa.

University of the State of New York.

American Veterinary College.

141 West 54th St. NEW YORK CITY.

The regular course of lectures commences in October, each year. Circular and information can be had on application to

A. LIAUTARD, M.D.V.S.,
Dean of the Faculty.

JUST PUBLISHED.

HORSES TEETH:

A Treatise on their Mode of Development, Physiological Relations, Anatomy, Microscopical Character, Pathology, and Dentistry; based on the works of well-known Odontologists and Veterinary Surgeons; to which is added a Vocabulary of the Medical and Technical Words used.

By WILLIAM H. CLARKE. Price, post-paid, $1.50.

ORANGE JUDD CO., 245 Broadway, New York.

Sportsman's Companion.

Gives outlines of nearly two hundred Different Works on Out-Door Sports and Pastimes. Contains nearly One Hundred Spirited Illustrations of Horses, Dogs, Fish, Birds, and Wild Game generally — drawn from life. Elegantly printed, tinted paper. Sent post-paid on receipt of two 3-cent stamps.

ORANGE JUDD COMPANY,
*Publishers of all Works on Field Sports.*
245 Broadway, New York.

**Stanyan's Patent Bread Mixer and Kneader.**
Just the thing for a Christmas Present. No. 2, taking three to four qts. of flour, $3.25. No. 1, for very small families, $2.00. Forwarded upon receipt of price.
DUTCHER TEMPLE CO., Sole Manufacturers and General Agents, HOPEDALE, MASS.
Money Order and Telegraph Office, Milford, Mass.

---

BEST SELF-OPENING. Always give satisfaction.
M. CARTER, Plainfield, Ind.
# GATE

---

## The Triumph Wind Engine.

It runs with less wind, is more powerful, better constructed, therefore more durable, less liable to derangement by storms than any other similar machine offered in the market. It has self-oiling boxes. It is well balanced, turning easily to any point of the wind. We make the Celebrated Racine Wood Pump, Chain Pump, Tubing, Tanks, Washing Machines, Sand Paper ing Machines, etc.
Send for free Illustrated Catalogue.
**WINSHIP BROS., Drawer 91, Racine, Wis.**

---

We manufacture the Old Reliable, well known Solid WHEEL STOVER WIND MILL, and O. E. WINGER'S IMPROVED DOUBLE-FACED GRINDER, which is operated by pumping windmills, a novel and perfect rapid grinding mill for grinding all kinds of grain. It is designed also to be operated by any kind of power, with belt, tumbling shaft, or by one or two horses with a sweep attached. Agents wanted. Send for catalogue.
**E. B. WINGER,**
SUCCESSOR TO STOVER WIND ENGINE CO.,
**Freeport, Ill., U. S. A.**

---

## THE CHAMPION
### WIND MILL POWER
### The Best in the World.

It is perfectly self-regulating, and presents no unnecessary surface to the wind. Pronounced by millwrights and mechanics to be superior to all other mills made. Do not buy until you have investigated the Champion. All information regarding the mill free.
**POWELL & DOUGLAS, Waukegan, Ill.**

---

TRADE MARK.
## "IRON AGE"
## CULTIVATOR
DIFFERENT COMBINATIONS. UNEXCELLED & UNEQUALLED.
**Most Popular Tool ever Introduced.** If not handled by your Dealer, send direct to Sole Manufacturers for Illustrated Catalogue.
B. S. & F. BATEMAN, **Spring Mills, N. J.**

---

## $14 SHOT GUN!
The Best Double-Barreled Shot-Gun in the world for the money. Warranted genuine twist, with *Steel Locks, Bolts, Box Wads, Box Caps and Wad Punch.* Also our celebrated Kentucky Rifle for **$12, warranted or no sale.** Send for Illustrated Catalogue and Price Lists to
**James Brown & Son,** Enterprise Gun Works,
ESTABLISHED, 1848. **136 & 138 Wood St., Pittsburgh, Pa.**

---

## GUNS
Lowest prices ever known on **Breech-Loaders, Rifles, and Revolvers,**
**OUR $15 SHOT-GUN**
at greatly reduced price. Send stamp for our New Illustrated Catalogue (C)
P. POWELL & SON, 238 Main Street, CINCINNATI, O.

---

**BEST WASHER AND WRINGER**
*in the World.* Guaranteed to do perfect work or money refunded. Warranted for 5 years. Price of Washer, $8. Sample to agents, $3.50. Price of Wringer, $7.50. Sample $4.25. Circulars free.
**ERIE WASHER CO., ERIE, PA.**

---

## MAKE MONEY, ALL OF YOU!
**Caxtonette Press, $8.00.**
**Caxton Press, $13.00.**
COLUMBIAN PRESSES from $25 to $98; will do first-class work. All are SELF-INKING. **Presses from $3.** CURTIS & MITCHELL, Boston, Ms. Send Stamp for catalogue. Estab 1847.

---

## MAKE YOUR OWN RUGS
**Beautiful Turkish Rug Patterns.** Any lady can make them from rags or yarn at a trifling expense. Great profits, permanent business to Agents. Send stamp for circular. E. S. FROST & CO., 2 Tremont Row, Boston, Mass

---

**USE THE VERY BEST.**
"Trade R Mark."
## ANNATTO.
**L. E. RANSOM, 34 Maiden Lane, N. Y. City.**

---

# HANSEN'S DANISH LIQUID BUTTER COLOR!

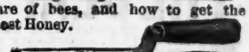
Has taken **Thirty Highest Prizes,** and **three Gold Medals** at World's Fairs. Is prepared in *vegetable oil, used to color the* **finest butter** made in Europe, and fast superseding all other Coloring in America. *Does not color the butter-milk,* makes butter beautiful, **greatly** *enhances its value.* **No alkali** used. One dozen bottles, with directions for making the finest butter, free to druggists or dealers. HANSEN'S LIQUID CHEESE COLOR, LIQUID EXTRACT OF RENNET. No Manufacturer or Re-packer of Butter can afford to neglect these Danish preparations. GANG PRESSES and Self-Bandaging Cheese Hoops. All royalties paid by us. $625 CASH PREMIUMS at late International and State Dairy Fairs for very best Apparatus for Manufacturers of Butter and Cheese. Acid, Butter-milk and Skim-Milk saved. "ANTI-HUFF" EXTRACT, a great success, makes finest Skim-Milk Cheese. ANNATTO, RENNETS, BANDAGE, ANNATTO, SCALE BOARDS, FAIRBANK'S SCALES, etc. Lapham's Patent Seamless Cheese Bandage taking wonderfully—bound to supersede. Less expensive—no waste—saves making Bandage. Sizes for 13-inch to 16-inch cheese. Samples by mail. Correspondence answered. Circulars furnished. COME AND SEE OUR CREAMERY. ALSO, BARN AND SILO.

## CHEESE and BUTTER MAKERS' SUPPLIES and COMPLETE MANUFACTURING OUTFITS!
**FURNISHED BY WHITMAN & BURRELL, LITTLE FALLS, N. Y.**
**THE BEST COOLERS OR VATS FOR RAISING CREAM GUARANTEED.**

---

MUTH'S
## HONEY EXTRACTOR
AND
## UNCAPPING KNIFE.

The Extractor is made of all metal and is always ready for use, easily cleaned, and will last a life-time. In fact they have only to be used to be appreciated. Every Bee-Keeper should send for my circular giving details regarding the care of bees, and how to get the most Honey.



**CHAS. F. MUTH, No. 976 Central Av., Cincinnati, O.**

---

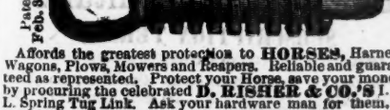
**AGENTS WANTED**
**To Sell the Favorite**
## CAKE AND BAKING PAN.
**WILL SELL ON SIGHT TO EVERY HOUSEKEEPER.**
The success of our agents proves it to be the best selling article in the market. One agent made **$120** in **2** weeks, another **$95** in **10** days, another **$41** in **4** days. **Boxing and Freight Free to Agents.** Send for circulars to nearest address. **SHEPARD & CO., Cincinnati, O., or St. Louis, Mo.**

---

## THE OPPENHEIM
## DOUBLE BUGGY.
Instantly changed from a neat Buggy into a roomy 4 passenger Carriage. Entirely new principle. No rattling or shaking. No half-and-half look about it. Send for illustrated price list. New Haven Conn.
**THE OPPENHEIM M'F'G CO.**

---

## I. X. L. SPRING TUG LINK




Affords the greatest protection to **HORSES,** Harness, Wagons, Plows, Mowers and Reapers. Reliable and guaranteed as represented. Protect your Horse, save your money, by procuring the celebrated **D. RISHER & CO.'S** I. X. L. Spring Tug Link. Ask your hardware man for them, or send to
D. RISHER & CO.,
Corner of 4th and Wood Streets, Pittsburgh, Pa.

---

## RIDGE'S FOOD
**For Infants & Invalids,** Used in Hospitals, by Matrons, Physicians and Mothers everywhere. A steam-cooked food, and therefore suited to the weakest stomach. Take no other. Sold by druggists. 25 cts. and upwards. WOOLRICH & CO. on every label.

---

## VIOLIN OUTFITS.
**Consisting of Violin, Box, Bow and Teacher, Sent to any part of the United States on 1 to 3 days trial before buying.**

**at $8.50, $7., $12. & $22. each. Send Stamp** for **Beautifully Illustrated** 32 page Catalogue of Violins, Guitars, Banjos, Cornets, Flutes, Strings all kinds, Harmonicas, Organ Accordeons, Music Boxes, &c. **Lowest Prices.** Mail Orders a Specialty. C.W. Story, 21 Central St. Boston, Mass

---

LINCOLN PATENT
## Channel Can Creamery.

DEEP SETTING PERFECTED.
**Gets all the Cream in less than ten hours** with ordinary well or running water, or in two hours with ice water, with less than half the ice called for by any other process.
AGENTS WANTED. Send for circular.
**WM. E. LINCOLN, Warren, Mass.**

---

REID'S
## Creamery.

The simplest, best, and most convenient yet invented.
**AGENTS WANTED.**
Send for circular to
**A. H. REID, 1631, 33 & 35 Harker St., Philadelphia, Pa.**

---

## HOUSE-KEEPERS, ATTENTION!
**THE GLOBE WASHBOARD AND THE IMPROVED UNION CHURN**

Are the best in the world. Neither have any equals. Over 600,000 **Globe Washboards** sold in 1879. No more sore hands or torn clothes on inferior washboards. Buy it and try it. The Improved Union Churn is the perfect butter-maker. Easier and quicker than by any others. One trial will convince any one of the fact.
Send for circulars with full details.
Liberal terms to dealers.
**UNION MANF'G CO., Toledo, Ohio.**

---

Rectangular and Square **BOX CHURNS**
**Cheapest and Best.** No inside fixtures, and *always reliable.* Six sizes of each kind made. Three sizes of the *Lever* Butter Worker made. Best material used, and every Churn and Butter Worker *warranted* exactly as represented. One Churn at wholesale where we have no agent. *Send Postal for Circulars.*
AGENTS WANTED.
**CORNISH & CURTIS, Fort Atkinson, Wis.**

---

## BUTTER WORKER.
### Lilly's Patent.

Won **First Premium** at the American Institute Fair, New York, in 1878; at the Fair of the Penn. State Agricultural Society in 1879; at the Dairyman's Fair at Delhi, N. Y., in 1879, and at County Fairs innumerable. Acknowledged to be the **only self-feeding and reliable machine in the market.** Descriptive circular sent free.
**C. H. R. TRIEBELS, 316 Race St., Phila, Pa.**

---

## EVAPORATING FRUIT.
**SENT FREE** | Treatise on improved methods. Tables, yields, prices, profits, and general statistics.
AMOS STOUFFER, Chambersburg, Pa.

---

★ ★ ★ ★ ASK ★ FOR ★ ★ ★ ★
**Wells, Richardson & Co's**
## PERFECTED BUTTER COLOR
**It Gives Butter the gilt-edged color the year round.** The largest Butter Buyers recommend its use. Thousands of Dairymen say **IT IS PERFECT.** Used by all the best Creameries. Awarded the International Diploma at N. Y. Dairy Fair. Ask your druggist or merchant for it; or write to ask what it is, what it costs, who uses it, where to get it. **WELLS, RICHARDSON & CO., Proprietors, Burlington, Vt.**
★ USE ★ ONLY ★ THIS ★ THE ★ FIRST ★ AND ★ THE ★ BEST ★

SUN SUN CHOP TEA

## Special Proposition!

We will send by MAIL, postage paid, a 3½ LB. PACKAGE of our celebrated SUN-SUN CHOP TEA on receipt of $2.50. It is the FINEST imported BLACK TEA, with a GREEN TEA flavor. Warranted to SUIT ALL TASTES. Parties wishing to test it before buying in quantity we will send SAMPLE on receipt of 6 CENTS. Postage stamps taken. SPECIAL TERMS ON LARGE ORDERS. Particulars free.

**The Great American Tea Co.,**
IMPORTERS,
31 and 33 VESEY ST.,
P. O. Box 4235, NEW YORK.

**IOWA FARMS**

Over **1,000,000 Acres** of Choice Farming Lands in the **Near West.**

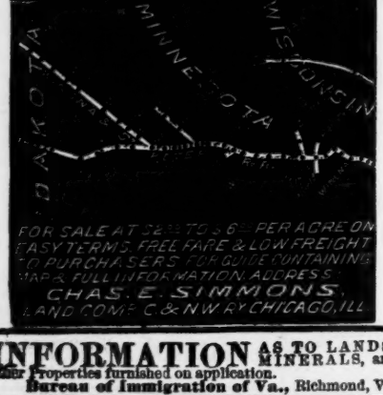
For Sale by the **Iowa R.R. Land Co.**
Cedar Rapids, Iowa.
Branch Office, 22 Randolph St., Chicago, Ill.

**UNION PACIFIC RY. LANDS**
IN NEBRASKA.
**Fertile Soil, Long Summers, Short Winters.**
**Special Inducements to Land Seekers.**
Those going West will find it to their advantage to send for information, which will be mailed free.
Apply to LEAVITT BURNHAM,
Land Commissioner U. P. Ry. Co.,
Omaha, Neb.
☞ Refer to this advertisement. 21

**FARMS.** 150 Delaware Fruit and Grain Farms cheap. Catalogues free. A. P. GRIFFITH, Smyrna, Del.

**CALIFORNIA LANDS,**
large or small tracts; homes or investments, for sale by MOFFER BROTHERS, 302 Sansome St., San Francisco, Cal.

**200 MARYLAND FARMS,** in Tracts from 30 to 300 acres.
Near railroad and navigable Salt-water (with all its luxuries), in Talbot Co., Md. Climate mild and healthy. Titles good. New Pamphlet and Map showing *location*, free. Address C. E. SHANAHAN, Atty., Easton, Md.


1,000,000 ACRES CHOICE LANDS IN
MINNESOTA & DAKOTA
MINNESOTA
WISCONSIN
FOR SALE AT $3 TO $6 PER ACRE ON
EASY TERMS, FREE FARE & LOW FREIGHT
TO PURCHASERS. FOR GUIDE CONTAINING
MAPS, FULL INFORMATION, ADDRESS
CHAS. E. SIMMONS,
LAND COMR. C. & N.W. RY. CHICAGO, ILL.

**INFORMATION** AS TO LANDS, MINERALS, and other Properties furnished on application. **Bureau of Immigration of Va.,** Richmond, Va.

**FARM** for sale, only $14 for a choice homestead of 160 acres, in the **WONDER-LAND** of the West. Send $1 and get the *Herald* for six months, a 7-column folio, and U. S. land laws, and learn all about the country. Address HERALD, Alexandria, Dakota.

**St. Paul, Minneapolis & Manitoba Railway**
Offers for sale at very low prices and on easy terms,
**2,000,000 ACRES** of the most fertile lands in Minnesota, mostly situated in the far famed
**RED RIVER VALLEY**
of the North. The Great
**WHEAT GARDEN**
of the World. Three dollars per acre allowed to settlers for breaking and cultivation. Large descriptive pamphlets and maps mailed free. Address
D. McKINLAY, Land Com'r., St. Paul, Minn.

**NORTH STAR SEED FARMS, 1881.**
Fifth Annual Catalogue now ready, free, on application. Former correspondents will be served without application. The products of these Seed Farms, the most Northern in America, have established beyond controversy the great organic law, "**that the further North Seeds are grown, the earlier their products will mature.**"
**Our St. Paul Tomato, Early Minnesota Sweet Corn, Red River, and Squaw Corn, Pure Scotch Fyfe Wheat** (Seed Stock), **Carrots, Beets, Radishes,** and nearly everything in Vegetable List cannot be equalled in America.
**T. M. METCALF,**
Seed Grower and Jobber, **St. Paul, Minnesota.**

**VIRGINIA LANDS, etc.** Reliable information given by BUREAU OF IMMIGRATION OF VA., Richmond, Va.

**FIVE HUNDRED VIRGINIA FARMS AND MILLS for Sale or Exchange.** *Write for free Catalogue.* R. B. CHAFFIN & CO., Richmond, Va.

**MARYLAND FARMS $7 to $25** per acre. Short winters, breezy summers, healthy climate. Catalogues free. H. F. CHAMBERS, Federalsburg, Md.

**BEFORE BUYING OR RENTING AN**
**ORGAN**
Send for our LATEST ILLUSTRATED CATALOGUE (82 pp. 4to.), with NEWEST STYLES, at $51 and upward; or $6.38 *per quarter*, and up. *Sent free.* MASON & HAMLIN ORGAN CO., 154 Tremont St., BOSTON; 46 E. 14th St., NEW YORK; 149 Wabash Av., CHICAGO.

**THE DEAF HEAR**
THROUGH THE TEETH.
PERFECTLY, all Ordinary Conversation, Lectures, Concerts, etc., by a wonderful New Scientific invention, THE DENTAPHONE. For remarkable public tests on the Deaf—also on the Deaf and Dumb—see *New York Herald*, Sept. 28th; *New York Christian Advocate*, Nov. 10., etc. Small Size—can be carried in the pocket. The Deaf should send for FREE Illustrated descriptive Pamphlet to American Dentaphone Co., 143 W. 4th St., Cincinnati, O.

**INVALID ROLLING CHAIR.**
(RECLINING)

A Priceless boon to those who are unable to walk. Gen. A. H. Stephens, U. S. C., and hundreds of others use them. Send for Circular to
FOLDING CHAIR CO., New Haven, Conn.

**Building Felt.**
This water-proof material, resembling fine leather, is for outside work (*no tar substances used*) and inside, instead of plaster. Felt carpetings, etc. Send for circular and samples,
C. J. FAY, Camden, N. J.

**American Agriculturist**
**SUBSCRIPTION TERMS.**
(**English** and **German** Edition at same Rates.)
For *One* or *Two* Subscriptions, *One Year*, the price will hereafter be (post-free) **$1.50** each, instead of $1.60.

[ALL POST FREE.]

| | |
|---|---|
| *Three Subscribers one year* | $4, or $1.33 each. |
| *Four Subscribers one year* | $5, or $1.25 each. |
| *Five Subscribers one year* | $6, or $1.20 each. |
| *Six Subscribers one year* | $7, or $1.17 each. |
| *Seven Subscribers one year* | $8, or $1.14 each. |
| *Eight Subscribers one year* | $9, or $1.12 each. |

**Ten or more Subscribers, post-free, Only $1 each.**
[A free copy to sender of club of 20 at $1 each.]
☞ **Single Numbers** sent, postpaid, for 15 cents each. Specimen numbers for examination sent, postpaid, for 10 cents each.... ☞ **Subscriptions** can begin at any time.
**The Above Terms** are for the United States and Territories, and British America. Add 14 cents extra per year for papers sent outside of the United States and British America, *except* to British Honduras. For the last named country the extra charge is 38 cts. per year, to cover extra postage, and Single Numbers, 17 cents, post-paid.... **Remittances,** payable to Order of Orange Judd Company, may be sent in form of Checks or Drafts on N. Y. City Banks or Bankers; or P. O. Money Orders; or in Registered Letters, such letters to have the money enclosed in the presence of the Postmaster, and his receipt taken for it, and the postage and registering to be put on in stamps. Money remitted in any one of the above three methods is safe against loss. **Bound Volumes** from Vol. 16 to 38 inclusive, supplied at $2 each, or $2.50 if to be sent by mail. Sets of numbers sent to the office will be bound in our regular style for 75 cents (30 cents extra if to be returned by mail). Missing numbers in such volumes supplied at 10 cents each.—**Any Numbers** of the paper issued for 23 years past, sent post paid for 15 cents each; or *any* full year, sent unbound, for $1.50.... **Clubs** of Subscribers can be increased at any time, at the club rates, if new members begin at same date as the original club.

THE
**Ladies' Floral Cabinet**
AND
**PICTORIAL HOME COMPANION.**
**The Handsomest Illustrated Journal of Household Art, Flowers, and Home Literature in America.**
PUBLISHED MONTHLY.
A large 16 page finely illustrated Monthly Journal.
Eight pages are devoted to *Practical Floriculture*, and the remaining eight to short stories, spicy selections, and household topics of general interest. A choice selection of music is given with each No. To each subscriber is given a rare premium. (*Send for premium list.*) See what "The Christian at Work" says of it:
*A GEM OF A JOURNAL.*
"Since the *Floral Cabinet* has entered on a new career in the hands of the present publishers, with a radical revolution in its editorial management, it has rapidly risen in public favor, and has enjoyed a largely increased circulation, as it richly deserves. The *Floral Cabinet* is one of the best guides to flower culture and home adornment. It tells all about flowers and everything that is akin to flowers, and shows the difference between management and mismanagement. With the aid of the *Floral Cabinet* any lady may easily make her home beautiful. The use of exactly such a publication as this among the young people of a family leads to refinement of taste, and to an acquaintance with all that makes home happy. The *Cabinet* is full of sunshine from beginning to end, rich with original contributions both in prose and poetry, and elegant with choice woodcuts made expressly for its pages by most eminent artists. Its price is only a dollar and a quarter a year, with premiums enough in the way of valuable seeds to set up a garden or conservatory. No home ought to be without the monthly visits of the *Floral Cabinet*."
The above is only one of many notices of the same character.
**SUBSCRIPTION.**

| | |
|---|---|
| Per Year | $1.25 |
| Six Months | .65 |
| Quarterly Edition | .50 |
| Three Months | .35 |
| Specimen Copy | .10 |

**Send 3 cents for specimen copy of The Fret Sawyer's Monthly.**
ADAMS & BISHOP,
*46 Beekman St., N.Y.*
**Box 2456.**

**"FOREST AND STREAM."**
**The American Sportsman's Journal.**
DEVOTED TO
**NATURAL HISTORY,**
**FISH CULTURE,**
**FISHING,**
**SHOOTING,**
**THE DOG,**
**THE RIFLE,**
**And YACHTING.**
**Discusses Questions of Live Interest to every Farmer in America.**
Send for a Sample Copy.
FOREST AND STREAM PUBLISHING CO.,
New York City, N. Y.

**SENT FREE,** FOWLER & WELL'S **Phrenological Journal**, a back number as specimen; also, List of Books. Address, on postal,
FOWLER & WELLS, 751 Broadway, N. Y.

**ADVERTISING RATES.**
**American Agriculturist.**
**ENGLISH EDITION.**
*Ordinary Pages*, **$1.00** *per line* (agate), each insertion
*Last Page, and Third Cover Page*, **$1.25** *per line.*
*Second Cover Page*—**$1.50** per line.
*Page next to Reading and Last Cover Page*—**$2.00** per line.
No advertisement taken for less than **$3.00** each insertion.
*Fourteen agate lines make one inch.*
**GERMAN EDITION.**
*Ordinary Pages*, **10** cents per line, each insertion.
*Second Cover Page*, **15** cents per line.
*Page next to Reading and Last Cover Page*, **20** cts. per line.
No advertisement taken for less than **$1.00** each insertion.
☞ No Advertisement of Medicines or Humbugs received.
Address all orders to
**ORANGE JUDD COMPANY,** 245 BROADWAY, N. Y.